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LOKPAL BILL

A Drama Unfold



The Jan Lokpal Bill campaign began in January 2011 in the backdrop of the publicity that accompanied the several mega-scams that surfaced in 2010, notably those relating to the Commonwealth Games and the telecom spectrum allocations. It caught the public imagination with Anna Hazare's fast at Jantar Mantar in New Delhi in April 2011. That forced the UPA government to constitute a joint drafting committee for a Lokpal bill. The civil society representatives in the committee proposed a bill called the Jan Lokpal bill, which became the basis for discussions. The basic principles on which the bill was drafted were culled from the United Nations Convention against Corruption, which required all countries to put in place anti-corruption investigative agencies that would be independent of the executive government and would have the jurisdiction to investigate all public servants for corruption. The Lok Sabha passed a historic Lokpal and Lokayuktas Bill, 2011, but defeated a parallel Constitution (116th Amendment) Bill, which

would have given the Lokpal constitutional status. On December 22, the government introduced the Bill along with the Constitution (116th Amendment) Bill in the Lok Sabha. However the UPA government didn't put it to vote in the Upper House. This Bill incorporated some of the recommendations of the Parliamentary Standing Committee on Personnel, Public Grievances, Law and Justice. This was a completely new Bill as the government had withdrawn its previous Lokpal Bill, which it introduced in the Lok Sabha on August 4, 2011, and later referred to the Standing Committee. The Standing Committee tabled its report on December 9, 2011. The August Bill did not propose to confer constitutional status on the Lokpal. The Standing Committee recommended constitutional status so that the Lokpal had higher stature and increased legitimacy. The committee believed that constitutional status would enhance the legal and moral authority of the Lokpal institution and also insulate the basic principles of the Lokpal from the vicissitudes of ordinary or transient majorities.

Yet, the Lok Sabha, which passed the Lokpal and Lokayuktas Bill with a few amendments, rejected the Constitution (116th Amendment) Bill, which required two-thirds majority of the House present and voting for its passage. The object of the Constitution Amendment Bill is laudable

as it seeks to create an autonomous and independent Lokpal at the Centre and Lokayuktas in the States with powers of superintendence and direction over investigation and prosecution of public servants accused of corruption. Yet, it failed to secure the requisite support in the Lok Sabha because members found a huge gap between its object and the provisions of the Lokpal and Lokayuktas Bill.

During the debate in Parliament, the opposition was critical of the government's control over the selection and removal of members of the Lokpal. But the Standing Committee report shows that it wanted to dilute the provisions with regard to selection and removal in the Bill that was introduced in August. That Bill had proposed a nine-member selection committee, five of whom would have been government nominees. The Standing Committee recommended a four-member selection committee comprising the Prime Minister, the Speaker of the Lok Sabha, the Chief Justice of India (CJI), an eminent Indian nominated unanimously by the Comptroller and Auditor General (CAG), the Chief Election Commissioner (CEC) and the Chairman of the Union Public Service Commission (UPSC), and the Leader of the Opposition in the Lok Sabha. The December Bill proposes five members, of whom three should be government nominees – the

Prime Minister, the Speaker, the Leader of the Opposition in the Lok Sabha – and the CJI or a judge of the Supreme Court nominated by the CJI, and one eminent jurist nominated by the President. Had the government accepted the Standing Committee's recommendation, it could have defused somewhat the opposition's criticism.

Though the Bill kept the CBI with the government, it allowed the Lokpal to have its own anti-corruption investigative body. It eliminated the need to get prior sanction for investigation from the government. It provided for the confiscation of the assets of corrupt public servants and the recovery of losses caused by their acts of corruption from them. But it created a terribly cumbersome procedure for investigation, by which a preliminary inquiry and hearing of the corrupt public servant were made compulsory before investigation could begin. This ended the possibility of making surprise raids and seizures on the premises of corrupt public servants or their abettors. The Bill of August provided that the Lokpal would have its own investigation and prosecution wings. The Standing Committee, however, sought to dilute this by recommending instead that the Lokpal conduct a preliminary inquiry, after which the Central Bureau of Investigation (CBI) would investigate. Also, the CBI would have autonomy over its investigation.

The committee also proposed that the Lokpal will have a supervisory role over the CBI in cases relating to Group A and B officers. The Bill of December further diluted these recommendations. The Lokpal, it

says, shall refer a preliminary inquiry against Group A, B, C and D employees to the Central Vigilance Commission (CVC). The Bill further says that after conducting the inquiry, the CVC shall submit a report to the Lokpal in the case of Group A and B employees and proceed according to specified procedure in the case of Group C and D staff. The CVC, according to the current Bill, shall send periodic reports to the Lokpal on its cases.

The Rajya Sabha witnessed a sordid drama. Several parties which had walked out in the Lok Sabha (the Samajwadi Party and the Bahujan Samaj Party) or had not moved any amendments there (the Trinamool Congress) moved amendments in the Rajya Sabha and their representatives delivered fiery speeches opposing the provisions of the Bill. When it became clear that at least three of the amendments (those relating to the selection and removal of Lokpal members, the CBI being brought under the administrative control of the Lokpal, and the deletion of the chapter on Lokayuktas in the States) were likely to be passed, the government engineered disturbances in the House, resorted to filibustering and prevented the amendments from being voted upon. And the House was prorogued with the Bill hanging in the air. The drama in the Rajya Sabha showed that the government was not even willing to go by the will of Parliament. This gives rise to fundamental questions about the functioning of Indian democracy.

The Bill adds that if a prima facie case exists against a public servant, the Lokpal may refer it to the CBI for investigation. Also, it may refer a

case for preliminary inquiry to the CBI (other than Group A, B, C and D officers). The Bill also provides that the Lokpal shall exercise general superintendence over the CBI (similar to the CVC's supervision currently). These additional dilutions in the later Bill, according to critics, reduce the Lokpal to just a post office.

The committee recommended that the Lokpal conduct only the preliminary inquiry and that it be authorised to initiate it suo motu. In such cases, the inquiry would have to be done by a five-member Lokpal Bench that is not connected with the suo motu initiation. More important, the accused would not get an opportunity to be heard at this stage, though the Bill of August allowed that. The later Bill rejects both these recommendations and sticks to the August version, which provided that the Lokpal could initiate an inquiry only on the basis of a complaint by a citizen. The only concession the Bill makes is that the Lokpal shall have its own inquiry wing to conduct a preliminary inquiry on a complaint it has received and has decided can be inquired into.

Under Article 252 or 253

Some parties questioned that lokpal bill should be brought under article 253 & not under article 252.

Article 252: Article 252. Power of Parliament to legislate for two or more States by consent and adoption of such legislation by any other State

(1) If it appears to the Legislatures of two or more States to be desirable that any of the matters with respect to which Parliament has no

power to make laws for the States except as provided in Articles 249 and 250 should be regulated in such States by Parliament by law, and if resolutions to that effect are passed by all the House of the Legislatures of those States, it shall be lawful for Parliament to pass an Act for regulating that matter accordingly, and any Act so passed shall apply to such States and to any other State by which it is adopted afterwards by resolution passed in that behalf by the House or, where there are two Houses, by each of the Houses of the Legislature of that State.

(2) Any Act so passed by Parliament may be amended or repealed by an Act of Parliament passed or adopted in like manner but shall not, as respects any State to which it applies, be amended or repealed by an Act of the Legislature of that State

Article 253: Article 253. Legislation for giving effect to international agreements Notwithstanding anything in the foregoing provisions of this Chapter, Parliament has power to make any law for the whole or any part of the territory of India for implementing any treaty, agreement or convention with any other country or countries or any decision made at any international conference, association or other body.

Relation between Union and States
The relation between Union and States is the very bedrock of the Indian Federal system. India is a federal State with a national government and a government of each constituent state. Although the structure of India is federal in a general way, yet there are certain aspects that are unique to federalism as practiced in India. The Indian government fol-

lows a strong central bias.

Some of the special features of India are as follows:

Agreement between the States: If two states agree that the Parliament can legally make laws with respect to the two states, then the Parliament can make laws relating to any law or set of laws related to the State Laws. This is an extension of the Parliamentary legislative as laid down by the Article 252 of the Indian Constitution.

Implementation of Treaties: The Parliament makes laws for the implementation of treaties, even if the subject falls under the legislative power of the State, for the bigger international interest of the country. This power has been given to the Union by the Article 253.

Suggested Amendments: Team Anna had suggested 34 amendments to rectify the government's Bill, and pointed out that four of these were critical to making the Lokpal a workable institution. These were that the selection and removal procedure should be made independent of the government; the CBI should be brought under the Lokpal's administrative control or, alternatively, the Lokpal should have its own investigative body; all government servants should be brought under the Lokpal's investigative ambit; and the procedure for investigation should be in line with the normal criminal investigation procedure. But the government was adamant in not accepting any of these either, and went on to bulldoze the passage of its Bill. It rejected all the amendments moved by the Opposition in the Lower House.

Notices for 187 Amendments in Rajya Sabha

Notice had been given for as many as 187 amendments to the Lokpal and Lokayukta Bill, 2011 including from the Trinamool Congress for deletion of the entire Part III of the Bill regarding establishment of the Lokayuktas. The Biju Janata Dal and the Shiromani Akali Dal too had given similar notices. By afternoon, the Rajya Sabha had received 173 amendment notices. The number swelled to 187 by evening as announced by the Minister of State for Personnel V. Narayanasamy. Normally notices are taken 24 hours in advance but on Thursday, notices were accepted till late evening, while the government took the stand in the House that there were too many amendments which "needed consideration."

Among major amendments were the ones given by the Bharatiya Janata Party for deletion of words "not less than" 50 per cent of members of Lokpal belonging to Scheduled Castes, Scheduled tribes, Other Backward Classes, Minorities and Women in Clause 3. They also asked for deletion of the word 'Minorities' in Clause 3 and inclusion of Leader of Opposition in Rajya Sabha on Selection Committee in Clause 4. They also wanted Lokpal to appoint his secretary and not select from a panel given by the government.

The Communist Party of India (Marxist) gave amendment for replacement of eminent jurist on the Selection Committee with "an eminent person to be nominated by the Chief Election Commissioner, Comptroller and Auditor General and Union Pub-

lic Service Commission. They also wanted the Inquiry Wing under the Lokpal to be replaced by "Investigation Wing" with the Central government providing officers and staff under exclusive jurisdiction of the Lokpal as decided in consultation with the Lokpal. The Party gave another amendment for inclusion under the Lokpal of "any corporate body, its promoters, its officers including Director against whom there is a complaint of corruption in relation to grant of government licence, lease, contract, agreement or any other action to influence government policy through corrupt means." They wanted Lokpal to take suo motu action in a complaint of corruption.

Other Angle

Passing of "Lokpal" Bill seems quite an impossible task, because every party to it has its interest. The UPA government summarily "check-mated" the social activists and drove them into existential crisis while simultaneously reducing the Lokpal bill to a mere a game tool. At the moment, the activists will be happier with the "no bill at all" than the current version of the bill tabled by the government. None of the political parties wants the Lokpal bill. Even if individual politicians want it, they can't do a thing about it because their "High Command" does not want it. But the country's future is at stake. The politicians are out to maintain the status-quo in order to protect their corrupt practices and ill-gotten wealth. But Team Anna has accepted this mission and is not going to relent until their goals are met. Team Anna rallied the masses and raised hopes of a utopian tomorrow - one with a clean and independent CBI under an incorruptible Lokpal. But after an entire year of wrangling with the government.

Meanwhile, the elections in UP are round the corner, and the Congress has been expanding its reach with some crafty electoral mathematics, a specialization offered at the Allahabad University. Ajit Singh is already in the bag. He was traded the lucrative civil aviation ministry in return for joining the Congress electoral alliance in UP. Likewise, the Railway Ministry is being "dangled" in front of Mulayam Singh Yadav of the SP. Doing well in the UP elections will surely serve as a shot in the arm for the Congress. First, it might cause a mental breakdown for Mayawati, especially after the election commission decided to cover her statues across the state. Secondly, it sets the stage for Rahul Gandhi's coronation as the PM. Besides, it will also give the Congress greater leverage against Didi.

On the other side of this pitched battle is the opportunistic BJP, which recently threw open its gates for Mayawati discards in UP. In contrast, the same BJP passed a strong Lokayukta bill in Uttarakhand. The BJP's goal is simple - stall the bill, harp on the government's incompetence, and cash in on the general discontent in the country, in hope of riding an anti-corruption wave to get back in power. The battle lines are drawn. On one side is the Congress party and its fickle, calculative allies. The leading trouble-maker among the allies is the TMC. The Congress needs her now and she knows that. Her primary long-term goal is to put the CPI(M) out of business in W. Bengal. But at present, everything she does is to extract the maximum from the Congress.

Conclusion

India's politicians again stand discredited in the eyes of people, who are asking questions to which the politicians, both the ruling party and the opposition, do not have an answer. If we truly want to make India corruption free we need to look at the new generation. Yes the government can help — first by cleaning up their administration and then by punishing corrupt people so severely that punishment becomes a deterrent to corruption. The government can support and reward honesty — reward people who pay taxes instead of harassing them and go after the people who do not pay taxes and yet lead opulent lives. Rewarding honesty and penalising dishonesty will create an ecosystem that supports a life of integrity. Let the honest man be privileged and acknowledged so that people aspire to be honest.

We need to target schools and colleges; motivate the youngsters to take charge so that they can start changing the world around them. We have to stop paying the cop for traffic offences, and we have to have the will to fight each time a bribe is asked of us. The people of India need the media now — the media that catapulted the movement to fame needs to open an action line where every act of corruption can be reported and exposed. Because this battle can be won, this change can be made and we do not need regulation to do so.

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India-Japan

Starting Active Partnership



The determined effort by India and Japan to inject life into their bilateral relationship is showing positive results. The meeting between Prime Minister Manmohan Singh and Japanese premier Yoshihiko Noda, the sixth of the annual India-Japan summits, is a marker of the steady progress. It yielded the first official confirmation since Japan's devastating tsunami-earthquake-Fukushima meltdown that the country has not shut the door on a civilian nuclear deal with India. While Mr. Noda stressed the importance of learning the right lessons from Japan's nuclear accident, it appears that negotiations on a deal to assist India develop peaceful nuclear energy will continue.

His pledge of \$4.5 billion over the next five years for the development of the Delhi-Mumbai Industrial Corridor, a commitment of financial assistance for two more infrastructure projects — Phase 3 of the Delhi Metro and a biodiversity conservation project in West Bengal — and his interest in sharing high-speed railway technology with India are significant. Japan's enhancement of its currency swap arrangement from \$3

billion to \$15 billion will help India better manage the rupee's slump against the dollar. This should also boost financial cooperation and economic and trade ties, which are currently far below potential. The Indian side wants more Japanese investment. For its part, Japan, which has just lifted a longstanding ban on the export of weapons, will be looking to sell defence hardware to New Delhi.

Prime Minister Noda reiterated his gratitude for the substantial support extended from India in the wake of the Great East Japan Earthquake. Prime Minister Singh expressed his hope that Japan will make a full recovery as early as possible. The two Prime Ministers concurred that, as next year marks the 60th anniversary of the establishment of diplomatic relations between Japan and India, they would make best use of the opportunity to strengthen cultural and people-to-people exchanges in order to deepen mutual understanding at their citizens' level.

Prime Minister Noda's visit capped a year of intense bilateral activity. The Foreign Ministers held a strategic dialogue in October, followed by talks between the defence ministers. In February, the two sides signed the Comprehensive Economic Partnership Agreement covering trade in goods as well as services; it came into effect in August. Earlier

this month, India, Japan, and the United States held their first trilateral strategic dialogue. It is creditable that despite the political instability in Japan, and the scandal-induced paralysis in India, both countries managed to fit in these high-level exchanges. It is crucial that growing India-Japan ties are viewed independently of each country's relations with China. New Delhi and Beijing are engaged in improving relations at various levels, including trade, eventually aiming to amicably resolve the boundary question. China is Japan's biggest trading partner; the two have a bilateral trade of \$340 billion that neither can afford to endanger. The fears expressed in a section of China's news media that Mr. Noda's visit is part of a "containment strategy" aimed at Beijing are needless. The Chinese government has done well to play them down.

History

Exchange between Japan and India is said to have begun in the 6th century when Buddhism was introduced to Japan. Indian culture, filtered through Buddhism, has had a great impact on Japanese culture, and this is the source of the Japanese people's sense of closeness to India. After World War II, in 1949, Indian Prime Minister Jawaharlal Nehru donated two Indian elephants to the Ueno Zoo in Tokyo. This

brought a ray of light into the lives of the Japanese people who still had not recovered from defeat in the war. Japan and India signed a peace treaty and established diplomatic relations on 28th April, 1952. This treaty was one of the first peace treaties Japan signed after the World War II. Ever since the establishment of diplomatic relations, the two countries have enjoyed cordial relations.

Bilateral Treaties and Agreements

- » Treaty of Peace (1952)
- » Agreement for Air Service (1956)
- » Cultural Agreement (1957)
- » Agreement of Commerce (1958)
- » Convention for the Avoidance of Double Taxation (1960)
- » Agreement on Cooperation in the field of Science and Technology (1985)

In the post World War II period, India's iron ore helped a great deal Japan's recovery from the devastation. Following Japanese Prime Minister Nobusuke Kishi's visit to India in 1957, Japan started providing yen loans to India in 1958, as the first yen loan aid extended by Japanese government. Since 1986, Japan has become India's largest aid donor, and remains so. Prime Minister Mori's visit to India in August 2000 provided the momentum to strengthen the Japan-India relationship. Since then, annual meetings between prime ministers, including Prime Minister Koizumi's visit to India in April 2005, Prime Minister Singh's visit to Japan in December 2006, Prime Minister Abe's visit to India in August 2007,

and Prime Minister Singh's visit to Japan in October 2008, have led to the establishment of the "Strategic and Global Partnership between Japan and India" as well as the further strengthening of the bilateral relationship. Most recently, during Prime Minister Hatoyama's visit to India in December 2009, Japan and India signed the Joint Statement "New Stage of Japan-India Strategic and Global Partnership".

While India has become the largest recipient of Japanese ODA since 2003-04, both bilateral trade in goods and Japan's FDI into India have almost stagnated during the past decade. With major Indian exports to Japan being dominated by products of mineral oils, gems & jewels, marine products (mainly shrimps) and iron ore, India and Japan have not yet formed such a dynamic international division of labour as can be seen among the East Asian countries. Japan's cumulative FDI into India is so far larger than that of Korea, but as far as electronics appliances are concerned, Japanese companies have been overwhelmed by Korean companies in the Indian market.

India and Japan are highly complementary economies, but their mutual complementarities remained underexploited hitherto. Recently, however, a new tide has been observed in Japan to expand Indo-Japan relations based on mutual complementarities. Japan has abundant capital and is highly advanced in technological skills and product development while India is endowed with a huge market and abundant human resources. Japan is outstanding in terms of

manufacturing abilities, whereas India has advantages in IT services and bioinformatics. Thanks to vigorous economic growth in the wake of the economic reforms and the "Look East Policy" introduced after 1991, India has successfully deepened its economic relations with the East Asian countries. We can see a remarkable expansion of India's economic tie-ups with the ASEAN countries, China and Korea since the late 1990s, with only IndoJapan relations lagging behind. India-China bilateral trade has remarkably expanded to be more than four times larger than India-Japan bilateral trade.

Koizumi's Visit to India in 2005

The significance of visit of Japanese Prime Minister Junichiro Koizumi in 2005 cannot be understated considering the fact that this was the first visit by a Japanese head of state after a hiatus of nearly half a decade. Prior to that, only two serving Japanese heads of state have visited India with a 10 year gap. While these statistics amply demonstrate that a regular exchange of high-level political visits have been a weak link in Indo-Japanese ties, perhaps Prime Minister Koizumi's visit is a landmark one as it promises to initiate bilateral comprehensive ventures into two areas - economic and strategic, which were lying potentially untapped for several years. The highlight of the Prime Minister's visit was indubitably the signing of the 'Japan-India Partnership in a New Asian Era: Strategic Orientation of a Japan-India Global Partnership' — an eight-fold initiative announced

towards strengthening Japan-India Global Partnership, which include the following:

- » Enhanced and upgraded dialogue architecture, including strengthening of the momentum of high-level exchanges, launching of a High Level Strategic Dialogue and full utilization of the existing dialogue mechanisms.
- » Comprehensive economic engagement, through expansion of trade in goods and services, investment flows and other areas of economic cooperation, and exploration of a Japan-India economic partnership agreement.
- » Enhanced security dialogue and cooperation.
- » Science & Technology Initiative
- » Cultural and academic initiatives and strengthening of people-to-people contacts
- » Cooperation in ushering a new Asian era
- » Cooperation in the UN and other international organization, including early reform of the UN Security Council
- » Cooperation in responding to global challenges and opportunities.

While this eight-fold initiative incorporates many issues addressed by the two countries in their Joint Declaration of December 2001, it is

certainly a more comprehensive delineation and framework of areas of common interests and concerns. In a nutshell, it can be stated that there is a unique paradox that has defined India-Japan relations at large. On the one hand, there has been the absence of any major dispute. On the other, however, what has been missing is the richness that could have characterized bilateral ties. In other words, the relationship to date can be chronicled as one of missed opportunities. It is clear that the synergy of Indo-Japanese cooperation is essential not just to further bilateral relations, but for the greater cause of a more secure Asia-Pacific region. Even though the visit by Prime Minister Koizumi was short, it should be used as bedrock for furthering bilateral ties.

An increased awareness among the general populace of the two nations as envisaged under the eight-fold initiative is equally crucial as the extent of media coverage received by such landmark steps as Koizumi's visit and need to be highlighted. While India's embarkation on a 'Look East' policy in the last decade was symptomatic of the significance India attaches to the region, the time has come to exploit the full potential of interaction with countries like Japan. The two countries should work together in the areas of

common interests and concerns in the years to come so that they can look back at their relations with pride and satisfaction at the end of the next five decades, when we celebrate a hundred years of the establishment of relations. Bilateral trade is expanding in the recent years. However, the speed and scope of expansion are still limited. Joint Study Group (JSG), composed of government officials and representatives of business and academia from the two countries, held four meetings after July, 2005. JSG submitted its report to both Prime Ministers when they met in July, 2006, which includes a recommendation for launching EPA negotiations. In December, 2006, the Prime Ministers of the two countries decided to launch immediate negotiations for the conclusion of a bilateral Economic Partnership Agreement/Comprehensive Economic Partnership Agreement aiming to complete in substance as soon as possible in approximately two years. Thirteen rounds of negotiations were held in New Delhi and Tokyo respectively as of July 2010.

Japan-India Strategic Dialogue on Economic Issues which reviews the current status of bilateral economic issues discussed at Summit meetings, and undertakes



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coordination as necessary was held 3 times in New Delhi and Tokyo respectively as of July 2010 since the Dialogue was launched in July 2007. In August 2007, the Business Leaders' Forum was held in New Delhi on the occasion of Prime Minister Abe's visit to India, and the Second meeting was held in Tokyo in October 2008.

Japan-India Trade (US\$, billion)

Year	2001	2002	2003	2004	2005	2006	2007	2008
Trade from India to Japan	2.2	2.1	2.2	2.6	3.2	4.1	4.1	7.9
Trade from Japan to India	1.9	1.9	2.4	3.0	3.5	4.5	6.1	5.2

Japanese private-sector's interest in India is rising, and, currently, about 627 Japanese companies have branches in India. (The figure doubled over the last 3 years.)

Direct Investment from Japan (Yen: billion)

Year	2001	2002	2003	2004	2005	2006	2007	2008
Direct Investment from Japan	18.4	18.7	14.6	15.0	29.8	59.7	178.2	542.9

(source: Japanese government documents)

The two Prime Ministers welcomed the entry into force of the Japan-India Comprehensive Economic Partnership Agreement (CEPA) in August this year and the commencement of negotiations on an agreement on social security. With regard to the Delhi-Mumbai Industrial Corridor (DMIC), Prime Minister Noda announced the intention of the Government of Japan to make available finance totaling 4.5 billion US dollars in the next five years. The two Prime Ministers concurred that they would promote participation of Japanese companies to realize the DMIC.

In this regard, both Governments reached an agreement on such issues as Japan's involvement with the Delhi-Mumbai Industrial Corridor Development Corporation (DMICDC), relaxation of financial restrictions so as to promote DMIC projects, allocation of natural gas for DMIC projects, and early realization of three model projects, namely, seawater desalination at Dahej, Gujarat, a microgrid system using large-scale photovoltaic (PV) power generation Project at Neemrana Industrial Area in Rajasthan, and gas-fired independent power producer (IPP) Project in Maharashtra. The two Prime Ministers concurred on the need to strengthen bilateral cooperation on infrastructure development in Southern India, improvement of connectivity between Chennai and Bangalore, and development of India's High-speed railway system. Prime Minister Noda pledged that the Government of Japan would extend ODA loans totaling approximately 1.7 billion US dollars (approx. 134.3 billion yen) in total for two projects including for the Delhi Mass Rapid Transport System Project. The two Prime Ministers decided to enhance the earlier bilateral currency swap arrangement from 3 billion US dollars to 15 billion US dollars. Concerning civil nuclear cooperation, Prime Minister Singh noted that he understood Japan's sensitivity well. The two Prime Ministers decided to move forward

with the negotiations with a view to concluding an Agreement for Cooperation in the Peaceful Uses of Nuclear Energy in a mutually satisfactory manner. With regard to rare earths, the two Prime Ministers shared the view that both Governments should continue their dialogue in order for Japanese and Indian enterprises to jointly undertake industrial activities.

The long-awaited India-Japan CEPA/EPA was finally signed in February 2011, and came into effect in August. Tariffs will be eliminated on 90 per cent of Indian and 97 per cent of Japanese goods over ten years. Japan is expected to export more auto-parts and steel products to India and import more agricultural and marine products from India. National treatment, on the side of Japan, is accorded for the application of approvals for the release of generic medicines. Some improvement has been made for the movement of people, including Yoga instructors, English teachers and Indian cuisine masters. India-Japan bilateral trade will be more than doubled to \$25 billion by 2014 under the CEPA/EPA.

What is CEPA ?

The second phase of India's Look East Policy aims to achieve just that. Against this background, India-Japan ties are appropriately positioned for take-off. The significance of Prime Minister Singh's visit to Japan can be seen in four areas: conclusion of four years of negotiations on a Comprehensive Economic Partnership Agreement (CEPA), deciding to speed up negotiations on a civil nuclear deal, simplifying visa procedures, and

finding common ground for convergence of interests in securing peace and stability in Asia. CEPA is broader than a free trade agreement because it includes steps to promote greater investment and also addresses intellectual property rights. The CEPA will help address this imbalance and Japan will have to reduce tariffs on 97 per cent of Indian imports, and India will have to reduce tariffs on 90 per cent of goods imported from Japan over the next decade. Japan will get greater market access for most industrial goods, as well as several agricultural products such as durian, curry, tea leaves, lumber, shrimp and shrimp products. India will get improved market access in Japan in auto parts, steel panels, and other industrial materials, as well as DVD players, video cameras and industrial machinery.

The two countries began talks on a civilian nuclear deal in June 2010 but the subject is too sensitive in Japan because India has refused to adhere to the NPT and CTBT as it considers them discriminatory, even though India has voluntarily suspended nuclear testing. In late 2009, Prime Minister Singh said that India's position on the CTBT could change if Beijing and Washington were to join the pact. China, India and the US are three of the nine "Annex 2" states that must ratify the treaty for it to enter into force. Japan thus agreed to start negotiation with India on a framework for the peaceful transfer of nuclear power technologies to India. Prime Minister Kan agreed to speed up negotiations, while seeking India's understanding for Japan's sentiments. Both leaders agreed

that civil nuclear energy can be a mutually beneficial area for cooperation. India welcomes Japanese firms to participate in the expansion of its nuclear industry for peaceful purposes.

Until recently, Japanese companies had a negative image about India's investment environment, which constituted a sense of "psychological distance" from India. However, the success of Korean companies in gaining a large share of the Indian consumer electronics market indicates that what Japanese companies tended to identify as areas of concern, i.e. adverse investment environment, are not necessarily critical factors that deterred Korean or Singaporean companies. The number of Japanese companies in India has increased from 267 in January 2006 to 438 in January 2008 and from 550 in October 2008 to 725 in October 2010. Their investment value has more than doubled to 189 billion yen in 2007-08 and totalled 809 billion yen in 2008-09, outstripping Japanese FDI into China.

Japan is globally ranked the second largest IT market with an estimated turnover of \$100 billion. Japan is renowned as one of the most competitive nations in manufacturing industries or hardware production. As of 2007, Japan had a total of 907,990 IT engineers and was short of 501,000 IT engineers including 360,000 professionals. Generally speaking, Japanese companies are inclined towards in-house procurement and are rather cautious about overseas IT offshoring. But when they offshore, they prefer to turn to China

, As for the destination of Japan's IT offshoring, currently 80 per cent of Japanese companies offshore to China and only 25 per cent to India. For India, Japan accounts for only less than 2 per cent of its total software and IT services exports. As for Japanese subsidiaries of IBM and Accenture, they are already fully utilizing Indian IT resources through offshoring to their Indian subsidiaries. It will be strategically more important for Japanese companies to focus on India as an IT offshore location, especially if they want to go global.

The level of people-to-people exchange between India and Japan is still far from satisfactory, which is exemplified by stagnated student exchanges. It should be remembered that there are as many as three million Indian Americans, most of whom are professionals, playing an indispensable role in deepening and cementing the relationship between India and USA. Improving the scholarship and Japanese language training schemes for Indian students, increasing the number of lectures given in English at Japanese universities, and providing attractive career paths for Indian graduates to apply for Prospects and Challenges for Expanding India-Japan Economic Relations enlarged employment opportunities in Japanese companies are urgently needed for attracting more Indian students to Japan. Now is a good time, when entering a new phase of India-Japan relations, for us to consolidate our relations especially through accelerated people-to-people exchanges. Number of Japanese nationals residing in India: 3,284 (as of October, 2008)

Number of Indian nationals residing in Japan: 22,335 (as of December, 2008).

The Japanese economy has been strained in the aftermath of the massive earthquake and tsunami, accompanied by radiation leak at the Fukushima nuclear power plant. We cannot ignore the after effects of the Great East Japan Earthquake on India-Japan economic relations. First, the number of Indian IT engineers working in Japan has been reduced from 15,000 to 7,000, since many Indian IT engineers have not yet returned to Japan. Further, since domestic supply chains have been damaged by the earthquake and given the record appreciation of the yen, Japanese companies are under even greater pressure to reallocate their production facilities to emerging economies.

All these factors provide a good opportunity for further accelerating Japanese FDI into India. The following two tasks should be addressed for further expanding India-Japan economic relations. First, the Delhi-Mumbai Industrial Corridor should be started along the right line, which will be the touchstone for future India-Japan collaboration. Second, human exchanges should be promoted by all means for cementing and expanding bilateral relations. Japanese Aid to India (1,545.7 million dollars)

- » Kerala Water Supply Project (II) (Yen Loan: 273.1 million dollars)
- » Delhi Mass Rapid Transport System Project (Phase 2) (II) (Yen Loan: 113.2 million dollars)
- » Gujarat Forestry Development

Project (Phase 2) (Yen Loan: 146.0 million dollars).

- » Transmission System Modernization and Strengthening Project in Hyderabad Metropolitan Area (Yen Loan: 197.5 million dollars)

Conclusion

As this year marks the fifth year since the establishment of the Japan-India Strategic and Global Partnership in 2006, with the 60th anniversary of the establishment of diplomatic relations next year, this State visit by Prime Minister Noda has impressed on all sides the friendly bilateral relationship between Japan and India, and contributed to further consolidating a trusting relationship at the leaders' level. With regard to bilateral relations, the two Prime Ministers shared the view that they should expand cooperation in the area of maritime security in the political and security fields. Substantial progress was made in many economic areas, including cooperation for the DMIC, infrastructure development in Southern India including the connectivity between Chennai and Bangalore, enhancement of the bilateral currency swap arrangement, extension of ODA loans including for the Delhi Mass Rapid Transport System, joint rare earths projects, among others. With regard to regional situations and global issues, the two Prime Ministers also affirmed that the two countries continue cooperation in various regional issues in Asia and other international issues such as the global economy and climate change.

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National Issues

Infant Mortality Rate is Declining

Infant mortality rate (IMR) has shown a 3 point decline, dropping from 50 deaths per 1,000 live births to 47 and moving a step closer to achieving the Millennium Development Goals (MDG) target of 30. However, IMR increased by one point in Kerala, Mizoram and Dadra and Nagar Haveli. According to the latest Sample Registration System (SRS), conducted by the Registrar-General of India, the two worst performing States — Madhya Pradesh and Himachal Pradesh — have shown an impressive 5 point decline. In the former, the figure dropped from 67 in 2009 to 62 in 2010 and in the latter, it was from 45 to 40. While the IMR national average is 47, it stands at 51 in the rural areas and 31 in the urban regions. However, neo-natal deaths continue to be a challenge where 34 babies are still dying for every 1,000 born.

Union Health and Family Welfare Secretary P. K. Pradhan said Bihar, Gujarat, Odisha, Punjab, Rajasthan, Tamil Nadu, Meghalaya, Sikkim and Tripura had shown a four-point decline in the IMR. Andhra Pradesh, Assam, Chhattisgarh, Haryana, Karnataka, Maharashtra, Delhi, Nagaland, Uttarakhand and Chandigarh have shown a three-point decline. Similarly, in Jharkhand, Uttar Pradesh, West Bengal, Jammu

and Kashmir, Manipur and Andaman and Nicobar Islands, the IMR came down by two points while it remained static in Lakshdweep and Puducherry. A one point decline was reported from Arunachal Pradesh, Goa and Daman and Diu. Importantly, the government intended to set up facilities such as Special New Born Care Units, New Born Stabilisation Units and New Born Baby Corners at different levels with at least one at the district level. The mother and child tracking system had evoked a huge response, with 1.32 crore women and 82.6 lakh children already registered.

50 % of HIV Patients in Asia live in India

India has half of Asia's HIV patients and is way ahead of China in disease burden. It also finds a place in the list of 22 countries prioritised for preventing mother to child transmission infection, according to the latest UNAIDS report, drafted jointly with the United Nations Children's Fund (UNICEF) and the World Health Organisation (WHO). About 48 lakh people were living with HIV in Asia in 2010 and nearly half of them — 49 per cent to be precise — are in India, says the report released on the eve of World AIDS Day. The percentage of pregnant women who tested positive for HIV infection in India also rose from 2 per cent in 2005 to 23 per cent in 2010.

Seven Asian countries report an estimated 100,000 or more people living with HIV in 2009, collectively accounting for more than 90 per cent of people with HIV in the region. India tops the list followed by China, Thailand, Indonesia, Malaysia, Myanmar and Vietnam, though the highest prevalence rate, one per cent, was observed only in Thailand. In Asia, the rate of HIV transmission appears to be slowing down. The estimated 3,60,000 people who were newly infected with HIV in Asia in 2010 were considerably fewer than the 4,50,000 estimated for 2001.

Ex-Im Bank of India Amendment Bill, 2011

Rajya Sabha approved the Export-Import Bank of India Amendment Bill, 2011, on 27 December 2011. It aims at promoting international trade by raising the capital funds of overseas trading from two thousand crore rupees to ten thousand crore rupees. The Bill was passed by the Lok Sabha earlier.

Lokpal and Lokayukta Bill, 2011

The Lok Sabha on 27 December 2011, approved the Lokpal and Lokayukta Bill, 2011 with the government making it clear that setting up of Lokayuktas by the states would not be mandatory. However, the Constitutional Amendment Bill, designed

to confer constitutional status on the anti-corruption watchdog, fell through, as the government failed to get two-thirds support for it.

The Lokpal and Lokayukta Bill, 2011 was approved after the government moved a few other key amendments, including keeping the Defence Forces and Coast Guard personnel out of the purview of the anti-graft ombudsman and increasing the exemption time of former MPs from five to seven years. A number of amendments moved by the Opposition, including Corporates, Media and NGOs receiving donations, were defeated. The government rejected the opposition's demand to bring CBI under Lokpal.

Regulation of Factor (Assignments Receivable) bill, 2011 Approved

Rajya Sabha approved the Regulation of Factor (Assignments Receivable Bill, 2011) on 27 December 2011 to help micro, small and medium enterprises. The bill aims at regulating assignment of receivables by making provision for registration of the rights and obligations of parties to contract. It applies to all types of industry whether it is small, medium or big. It will help mitigate the payment problem of the MSME units. Factors will be regulated by the Reserve Bank of India. The Lok Sabha had already passed the bill.

A bill to Add More Scheduled Tribes to List passed

Rajya Sabha of Indian Parliament on 22 December 2011 passed the bill the Constitution (Scheduled Tribes) Order (Amendment) Bill, 2011 to amend the list of Scheduled Tribes and add more tribes from North-Eastern India. The bill includes six more tribes namely Thangal, Zeme, Mate, Inpui, Liangmai, Rongmei from Manipur and substitutes Galo in place of Galong in the list of Scheduled tribes in Arunachal Pradesh. At present, 26 communities exist in the list of Scheduled Tribes in Arunachal Pradesh, which includes Galong as well. The Lok Sabha had passed the Bill on 19 December 2011.

Indian Army Blinded by Controversial Equipment

The Indian Army's imagery interpretation capabilities, critical to providing information on the locations of enemy troops and their military assets, have been compromised by flawed contracts placed with a company that has failed to provide critical software upgrades, an investigation by The Hindu has found. Documents obtained by The Hindu from the Ministry of Defence show that the firm responsible for supplying and integrating software used in critical image intelligence analysis was relieved of its responsibility to provide free upgrades in 2008 — and is now on the verge of receiving a Rs.165-crore contract for the supply of software it may no longer have

licensing rights for. MI17 — the super-secret military intelligence department that analyses data provided by India's spy satellites — relies on software provided by global software giants Intergraph, Oracle, and Bentley.

Rolta, an Indian company, supplied photogrammetry and geographical information system software licensed from these firms to the Army in 1996, integrating them into a single package to meet MI17's specific needs. From then to 2008, things went well — when a new contract for 14 photogrammetry and geographical information system packages came up to be signed. The earlier contract bound Rolta to provide software “updates and upgrades” free of cost, as part of a maintenance contract. In 2008, though, the phrasing was changed to just “updates” — freeing Rolta of the obligation to provide the most recent software released by the original equipment manufacturer. Rolta was paid Rs.506.45 crore for equipment purchased between 1998 and 2008. In addition, it received annual maintenance contracts for equipment purchased during this period; as of December 2008, their cumulative value was Rs. 40.66 crore per annum.

But by early this year, highly-placed military sources said, MI17's image-processing speeds had fallen to just a seventh of those being obtained by the National Technical Research Organisation, which also analyses the same data using similar software with the latest upgrades, Intergraph-Erdas. The records of the contract negotiation committee, or CNC, show a series of questionable deci-

sions led to this outcome. In the fourth meeting of the CNC, one member noted that an odd change had been made to the name of the software being supplied to MI17: "the vendor," he observed, "had added [the] company name 'Rolta' in all the software being provided by him." The change of name implied that the equipment being supplied was not the same as was purchased in 1996, which would have necessitated fresh acquisition procedures to be initiated.

Free Medicare For Poors in Maharashtra

Maharashtra government will spend Rs. 800 crore on the first phase of a health scheme for the poor, which is slated to benefit nearly 50 lakh families from eight districts, Maharashtra Deputy Chief Minister Ajit Pawar said at a function. Under the 'Rajiv Gandhi Jeevandayee Arogya Yojana,' any family earning below Rs. 1 lakh per annum can get free medical treatment and care worth Rs. 1.5 lakh a year. Maharashtra Chief Minister Prithviraj Chavan said that no other State had implemented such a scheme on such a wide level. He, along with the Deputy Chief Minister and State Health Minister Suresh Shetty distributed identity cards to needy families from the city at the function here.

4.5 Percent Quota For Minorities

The Union cabinet of India on 22 December 2011 approved 4.5 per cent share for minorities within the 27% OBC quota in jobs and univer-

sity seats. The approval will come in force from 1 January, 2012. It suggests that minorities can get 4.5 jobs out of every 100 government jobs and university seats. As per the data released by the National Commission for Religious and Linguistic Minorities, the OBC population was 52 percent of India's population, of which minorities constitute 8.4 percent. Justice Rajinder Sachar Committee Report-released in November 2006- had found the minority community under-represented in all spheres of professional and public life.

Notices for 187 Amendments in Rajya Sabha

Notice had been given for as many as 187 amendments to the Lokpal and Lokayukta Bill, 2011 including from the Trinamool Congress for deletion of the entire Part III of the Bill regarding establishment of the Lokayuktas. The Biju Janata Dal and the Shiromani Akali Dal too had given similar notices. By afternoon, the Rajya Sabha had received 173 amendment notices. The number swelled to 187 by evening as announced by the Minister of State for Personnel V. Narayanasamy. Normally notices are taken 24 hours in advance but on Thursday, notices were accepted till late evening, while the government took the stand in the House that there were too many amendments which "needed consideration."

Among major amendments were the ones given by the Bharatiya Janata Party for deletion of words "not less than" 50 per cent of members of Lokpal belonging to Scheduled Castes, Scheduled tribes, Other Backward Classes, Minorities and

Women in Clause 3. They also asked for deletion of the word 'Minorities' in Clause 3 and inclusion of Leader of Opposition in Rajya Sabha on Selection Committee in Clause 4. They also wanted Lokpal to appoint his secretary and not select from a panel given by the government.

The Communist Party of India (Marxist) gave amendment for replacement of eminent jurist on the Selection Committee with "an eminent person to be nominated by the Chief Election Commissioner, Comptroller and Auditor General and Union Public Service Commission. They also wanted the Inquiry Wing under the Lokpal to be replaced by "Investigation Wing" with the Central government providing officers and staff under exclusive jurisdiction of the Lokpal as decided in consultation with the Lokpal. The Party gave another amendment for inclusion under the Lokpal of "any corporate body, its promoters, its officers including Director against whom there is a complaint of corruption in relation to grant of government licence, lease, contract, agreement or any other action to influence government policy through corrupt means." They wanted Lokpal to take suo motu action in a complaint of corruption.

Courts Can Interfere in the Case of Contractual Job

The Supreme Court of India on 20 December 2011 ruled that courts can interfere in the case of contractual job if the decision taken by the management is arbitrary. A bench of the apex court, however, said that scope of such judicial review is not all per-

vasive. It said a writ Court is entitled to judicially review of the action and determine whether there was any illegality, perversity, unreasonableness, unfairness or irrationality that would vitiate the action. The court passed the order on a petition filed by Grid Corporation of Orissa Ltd challenging the Orissa High Court's order. In its order Orissa high court asked the grid corporation to reinstate one of its employee whose contractual job was terminated.

National Food Security Bill approved

The Union Cabinet of India on 18 December 2011 approved a draft National Food Security Bill that seeks to give legal entitlement of cheaper food-grains to 62.5 per cent of the country's population. The total financial liability to implement the law would be 3.5 lakh crore rupees, as funds will be required to raise agriculture production, create storage space and publicity among others. The bill aims to provide Indian citizens access to nutritional food at affordable prices. This bill proposes to give a legal entitlement to food to 75 percent of our rural population and 50 percent of our urban population.

The bill also provides for 7 kg of rice, wheat and coarse grains per person per month to priority households at 3 Rupees, 2 rupees and 1 rupee per kg respectively.

Ancient numbers in the land of Ramanujan

Literary sources in Tamil mention numbers only in words. However, we do have ancient literary references specifically mentioning eN ('numeral') as distinguished from ezhuttu ('letter of the alphabet,' for example, Tolkappiyam 655.4, Tirukkural 392). But as palm leaf manuscripts decay with time and hardly last for more than 200 years, we have to turn to durable stone or pottery inscriptions to know what the ancient Tamil numerals looked like. We illustrate two of them here, one from each class (Figs. 1 & 2). The oldest stone inscription featuring a numeral is the Tamil-Brahmi cave inscription from Tondur, near Gingee, in Villupuram district, assigned to about the 3rd century C.E. (Fig. 1). The numeral 3 engraved at the end of a short two-line inscription in the cave is represented by three horizontal parallel lines. The inscription records that the village of Agalur gifted three stone beds in the cave chiselled by Mosi. The gift was made to the Jaina monks resident in the cave. The village still exists with the same name Agalur, near Tondur, both of which still have sizeable Jaina populations. The numeral 3 has the same form as in contemporary Prakrit inscriptions in the Brahmi script in North India.

A well-preserved pottery inscription from Alagankulam near Rameswaram has only the numeral incised in fairly large size (Fig. 2). The inscription is dated to the 1st or 2nd century C.E. The number is read 408, from right to left, following the ancient convention of reading the digits from the right (ankaanaam

vaamato gatih). The first digit at right looking like the cross is the symbol for 4. It is followed by the symbol for 100 (resembling the Brahmi letter sa) and the last symbol at left is 8, incised in reversed direction.

As there is no accompanying text, we do not know the significance of the number. The find is still interesting for the absence of the place-value system. The convention of using symbols for 10, 100, and 1000 in expressing the higher numerals was current in Tamil Nadu until the advent of printing and the adoption of the international form of Indian numerals with place-value system. The pottery inscription is also good evidence for widespread literacy, including numeracy, in the ancient Tamil country.

Animals also Entitled to Accident Compensation

A bench of the Supreme Court including Justices BS Chauhan and TS Thakur on 16 December 2011 ruled that even animals are entitled to accident compensation. The court upheld an award of 13.48 lakh rupees for the death of a temple elephant. The animal was hit by a KSRTC (Kerala State Transport Corporation) bus. The court refused to accept the contention that the Motor Vehicles Act would be applicable to human beings and not to animals. It clarified that the definition of property in the Motor Vehicles Act is very inclusive and wide. Therefore, animal should be included under this act. The court added that the elephant was owned by the temple and it was God's property.

5 Girls Gailed as 'icons' by President

The girls, with little education and almost no support, turned down marriage proposals and faced the anger of their families and the community. Their stories of courage impressed the President so much that she got them invited to the Rashtrapati Bhavan. They earned praise from the President, who described them as "icons" and asked them to share their stories and encourage girls to say no to under-age marriages. For Afsana and Sunita, it was their second meeting with the President who encouraged them to campaign against child marriage among their peers.

While education opens up new avenues for the girl child, an early marriage brings with it a cycle of misery, poor health and poverty, she said. A young mother with children often become victim of poor health and mortality. She urged the district authorities to create more awareness of what the girls have done by taking them on a tour of their district during their school holidays to inspire others.

10 % of the Group B Posts in Paramilitary Forces to Ex-Servicemen

The Union Ministry of Home Affairs agreed to fill 10% of the Group 'B' posts in Central Paramilitary Forces from among Ex-Servicemen. Presently, the scheme caters to 38 lakh beneficiaries including 12 lakh Ex-Servicemen and over 26 lakh dependents. This scheme is currently being implemented through 247

polyclinics. Initially, 227 polyclinics had been approved by the Union Cabinet of India. Later, in 2008 another 199 polyclinics were sanctioned, out of which 20 are functional and 179 polyclinics are in various stages of implementation. During the year 2010-11, a total of 89 lakh patients attended the polyclinics. With the commissioning of all the sanctioned polyclinics, the entire fraternity of Ex-Servicemen would be covered comprehensively.

Cable Television Networks Regulation Act amended

The Lok Sabha on 13 December 2011 unanimously passed a Bill to further amend the Cable Television Networks Regulation Act, 1995. It replaces a Presidential Ordinance of 25 October, 2011. As per the amendments, there will be a check on objectionable contents. Doordarshan will be able to provide more free-on-air channels in the DTH mode to audiences across the country. Cable TV operators violating the provisions of the Bill will face penalty.

The legislation will reduce dependence on the television rating points, TRP. By 2014, the entire cable network will be digitized. Those Cable operators who will violate the Cable Television Network Regulation Act, 1995 Government will have the right to consider about the continuity of the Licence of those cable operators. Till date, this kind of provision was not in existence in the form of Act.

Kalam Favours Linking of Rivers

Former President of India A.P.J. Abdul Kalam advocated interlinking rivers and dams to form a smart national water grid management scheme as India cannot afford civil war or conflict over water. He said rivers, waterways and water resources must be nationalised on the lines of roads and power sectors. "Water is now in the control of States. It has to be linked by forming a national water grid management just like National Highways and power grid," he said. Inaugurating 'Agricon 2011', a conference on agriculture R&D trends 2020, organised by CII, he said, "Water cannot be a [source of] conflict in India. India cannot afford to have a civil war on water when we have to work unitedly for development. Nation is bigger than the individual parties (political parties) and States. Indian rivers have to be operated by the Army, Navy or the armed forces for equitable distribution of water to double food production."

About 170 million hectare arable land will be reduced to 100 million hectare due to increasing population growth and afforestation and environmental preservation activities, Dr Kalam said and urged agricultural scientists and technologists to work with organisations such as IFFCO to enhance average productivity per hectare from 1.1 tonnes to 3.4 tonnes of the available land for cultivation with less need of water. Referring to precision farming project of the State, he said by doing the right thing, in the right place at the right time, Tamil Nadu had created a great awareness among the farmers which gave higher productivity,

market access and made farmers as entrepreneurs.

When the entire nation was struggling to achieve even two per cent growth in agriculture, Gujarat posted seven to nine per cent over the past six years. The Gujarat government was able to do it by implementing mission mode action. Dr. Kalam also cited Bihar's experience in doubling the productivity and said "these experiences clearly show that 'we can do it', but what we need is a mission mode approach across the nation with respect to agriculture; and we need a creative leadership who has a vision for leading the second green revolution for the next 10 years."

Mullaperiyar Dam's Water Level Should Not Exceed 136 Feet

The Supreme Court of India directed Tamil Nadu to ensure that the water level in the Mullaperiyar dam does not exceed 136 feet but declined to entertain Kerala's plea for reducing the level to 120 feet. A five-Judge Constitution Bench, headed by Justice DK Jain gave the order. The Supreme Court asked Tamil Nadu and Kerala to maintain restraint on their statements on the Mullaperiyar dam row. Urging for sanity and sensitivity, the court lamented that they were adding fuel to the fire instead of dousing it. The Bench also asked the Centre to clarify its position on Tamil Nadu's plea for deployment of Central Industrial Security Force to protect the dam from possible vandalism.

Karnataka Now Third in Sugar Production

Karnataka has now emerged as one of the top sugar producing States in the country, after Maharashtra and Uttar Pradesh. The State's sugar production has shot up to 37.14 lakh tonnes, an increase of 12.25 lakh tonnes in just under a year, according to reports received in the State headquarters about a fortnight ago. The sugar year commences in October and ends in September. Even sugar recovery has improved dramatically, and Karnataka now stands second, after Maharashtra. Sugar recovery is the yield of sugar for every tonne of sugarcane crushed in factories. The average recovery in the State is now 10.95 per cent. It is 11.50 per cent in Maharashtra and 9.7 per cent in Uttar Pradesh. It was a happy augury that Karnataka had emerged as the third largest sugar producer in the nation. It was only some years ago that the State overtook Andhra Pradesh and Tamil Nadu. It now has almost 60 sugar factories, a quantum jump over the past decade. Sugarcane production in the State has increased from 228 lakh tonnes to 339.03 lakh tonnes in just about a year although the area under sugarcane has only marginally increased.

Amendments to the Petroleum and Minerals Pipeline Act

The Lok Sabha on 12 December 2011 passed the amendments to the Petroleum and Minerals Pipelines (Acquisition of Right of User in Land) Act, 1962. The Bill aims to make provisions for sufficient deterrence to criminals from committing the offence of pilferage or sabotage. The existing sub-section (2) of section 15 provides that whoever willfully re-

moves, displaces, damages or destroys any pipeline, shall be punishable with rigorous imprisonment of a term which shall not be less than one year, but which may extend to three years and shall also be liable to fine. Section 16 provides that offence under sub-section 15 shall be deemed to be cognizable under the Code of Criminal Procedure, 1973. The proposed amendments provide for higher quantum of punishment in terms of imprisonment and provision for death penalty in rare cases where the Act of sabotage is dangerous and is likely to cause death of any other person. The Bill further proposes to amend section 16 of the aforesaid Act to make the offences under sub-section (2), (3) of section 15 of the said Act to be cognizable and non-bailable. The amendment to the act was necessary to prevent pilferage of petroleum by organized gangs and saboteurs.

Supreme Court direction for Night Shelters for Homeless People

The Supreme Court directed state governments to build adequate number of night shelter to ensure that no homeless person has to sleep under sky this winter. A bench of justices Dalveer Bhandari and Justice Dipak Misra asked the governments to file their detailed report by 3 January 2012 on the status of night shelters, which are operating in their states. The bench, which passed separate orders for different states, asked the Chief Secretaries to ensure construction of sufficient number of shelters for the homeless and poor people.

NCT of Delhi Laws (Special Provisions) Bill of 2011

The Lok Sabha on 12 December 2011 unanimously passed the National Capital Territory of Delhi Laws (Special Provisions) Bill of 2011, which granted a three-year term extension to the Master Plan of Delhi (MPD). It is meant to ensure continued implementation of all the ongoing schemes for its betterment. The revised master plan of Delhi will have a long-term vision of 25 years to address the problems specially faced by the weaker sections of the society. The government intends to implement the second phase of the Jawaharlal Nehru Urban Renewal Mission after its current phase is over. The objective of the bill is to prevent sealing and demolition of unauthorised structures in Delhi till 31 December, 2014. It seeks to maintain the status quo regarding unauthorised colonies, which includes storages, warehouses, and godowns for farm produce, village abadis (settlements) and their extensions. Commercial establishments in rural areas and urbanised villages of Delhi are expected to get a reprieve after the proposed bill is enacted.

Village Water and Sanitation Committee in Each Gram Panchayat

The Government decided to set up a village water and sanitation committee in each Gram Panchayat, village and ward to ensure safe drinking water supply. The committee will be set up as a standing committee in each Gram Panchayat for plan-

ning, monitoring, implementation and maintenance of water supply schemes in the area with active participation of the villagers. The membership of the committee will consist of 6 to 12 persons comprising elected Panchayat members and at least 50 percent women with due representation to Scheduled castes and Tribes. The committee will be an integral part of the village panchayat. This initiative has been taken under the National Rural Drinking Water Programme to decentralize power and responsibilities and to give greater focus on water and sanitation issues.

Constitutional Amendment to Set up NJC Suggested

The Parliamentary panel on law and justice, headed by Abhishek Singhvi stated that the Constitution should be amended to set up a National Judicial Commission with powers to initiate criminal prosecution and sacking of corrupt judges. The concluded that judiciary cannot be left unpoliced in matters of corruption. The report prepared by the Parliamentary panel recommended setting up of a National Judicial Commission (NJC) to create a broad-based and comprehensive model of judges appointments. If necessary it should include amendments in the Constitution in the process of comprehensive model of judges appointment.

Recommendations of the Parliamentary Panel

- The NJC has to be entrusted with powers of both transfer and criminal prosecution of judges for corrup-

tion.

- The panel stated that Judicial Accountability Bill is meant to strengthen the existing in-house procedure of the judiciary to deal with wrong behaviour of judges.

- The panel also recommended that the former judges working as chairpersons and members of tribunals should also be brought under the NJC.

- It may also be given the power for dismissal or removal of judges by relevant amendments in the constitution.

Tamper-Free High Security Number Plates for Vehicles

Supreme Court of India on 8 December 2011 directed all states to ensure vehicles carry tamper-free high security number plates within four weeks. Giving last opportunity to state governments to implement the scheme, a bench of the apex court ruled that contempt proceedings will be initiated against the state authorities in case of non-compliance of the scheme within the time limit fixed by it.

The bench added that no further time will be granted to put in force the scheme and directed the state authorities to file their affidavits on compliance of its order within four weeks. The court passed the order on a PIL seeking its direction to introduce tamper-proof number plates and licences for vehicles.

Inspection of Mullaperiyar Dam by Empowered Committee

The Empowered Committee in its meeting on 5 December 2011 decided to send two technical members to inspect the Mullaperiyar dam before finalising its report following apprehensions raised by Kerala about the safety of the dam after mild tremors occurred in the area. The Empowered Committee is headed by former Chief Justice of India, A.S. Anand. The committee had conducted a spot inspection of the dam in December 2010. During its meeting on 5 December, the committee considered the reports of the studies and investigations conducted by various agencies it constituted to study the dam's safety. It also discussed the applications filed respectively by Kerala and Tamil Nadu and took note of their submissions.

The committee, according to Kerala ought not to have relied on the Supreme Court's order as it was not barred from receiving evidence in respect of seismic threat to the dam. Following Kerala's argument the committee agreed to hear the State's arguments on this count. Since Kerala filed an application for bringing on record the recent tremors and sought an oral hearing, the committee decided to send two of its members to conduct a spot inspection of the dam. Kerala's plea for oral hearing was also accepted. The committee directed Tamil Nadu and Kerala to make submissions on 2 January 2012. On 3 January the committee will consider the modalities for finalising its report to the Supreme Court.

During the months of July-November 2011, 25 earthquakes were reported in the Mullaperiyar dam region. Some of the earthquakes on 26 July and 18 and 26 November were more than magnitude 3 on the Richter Scale. The highest magnitude 3.8 was recorded on 26 July 2011. The frequent earthquakes caused panic among 50 lakh people in the downstream region of the Periyar dam. The fear was further heightened by the incessant rain in the catchments of Mullaperiyar shooting the storage above 136 feet mandated by the provisions of the Amendment Act of 2006. If the Mullaperiyar dam breaks due to flood or earthquake, a mass disaster would follow, wherein not only the life and property of 50 lakh people will be affected in Kerala, but lakhs of farmers of Tamil Nadu will also lose irrigation of about 2.5 lakh acres. Kerala therefore feels that Tamil Nadu should agree for the construction of a new dam offered by Kerala as a precautionary measure.

Adultery Law Biased against Men

The Supreme Court of India on 1 December 2011 stated that section 497 of the Indian penal Code is biased against men. The section punishes a man alone for adultery for having consensual sex with a married woman. As per the observation of the court, the provision of section 497 reduces a married woman to a property of the husband and it punishes man only despite the fact that the woman with whom he had consensual sex was an equal partner in the alleged crime. The court added that the provision is under criticism from certain sections for showing a strong gender bias. A

bench of the Supreme Court including Justices Aftab Alam and R M Lodha made the above observation.

Section 497 of IPC: Section 497 of IPC states that whoever has sexual intercourse with a person who is and whom he knows or has reason to believe to be the wife of another man, without the consent or connivance of that man, such sexual intercourse not amounting to the offence of rape, is guilty of the offence of adultery, and shall be punished with imprisonment of either description for a term which may extend to five years, or with fine, or with both. In such case, the wife shall not be punishable as an abettor.

21 Anti-Retroviral Treatment Plus Centres

The National AIDS Control Organisation (NACO) decided to roll out 21 Anti-Retroviral Treatment (ART) Plus centres to meet the increasing demand of providing second line drugs to HIV patients who failed to respond to treatment provided previously. The NACO's ART programme is headed by Dr B B Rewari. 21 more ART Plus centres will be rolled out exclusively for such HIV positive people who require second line drug therapy. 2600 people are currently on second line drugs for HIV as they were critical despite taking medication. Presently a total of 4.48 lakh people are availing free of cost drugs at 324 ART centres. Centres were proposed in Surat, Patna, Guwahati, Lucknow, Ahmedabad, and Jaipur. The government earmarked Rs 350 crore for the entire project of providing free of cost drugs at all ART centres. Of these 21 centres, seven are already

functional. 10 centres had also been set up to provide the facility for second line drugs and seven paediatric HIV centres in the country. In addition to the 324 ART centres and other second line ones, there are 678 link centres and 259 community care centres.

NACO stresses on strengthening the link between the ART centres and more than 5000 Integrated Counselling and Testing Centres where people are initially identified and detected with the virus. As per the National Family Health Survey-3, there are 2.47 million HIV infected people in India of which 3.8 per cent are children. Nearly 40 per cent of the people are unaware of their HIV status. According to NACO, there are around 30000 patients availing of medication in the private sector. The World AIDS Day theme was getting to zero, but for the NACO it was also providing 100 per cent access to anti-retroviral drugs.

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International Issues

Pakistan Bedges on Bonn Meet

Pakistan on Wednesday hinted at the possibility of participating in the coming Bonn Conference on Afghanistan but ruled out any high-level representation on the ground that Afghan soil had been used by North Atlantic Treaty Organisation (NATO) to attack the country in what the Army calls a "deliberate" act of aggression. Agreeing to consider German Chancellor Angela Merkel's repeated requests for Islamabad's participation, Prime Minister Syed Yusuf Raza Gilani said he would refer the suggestion of having Pakistan's Ambassador in Germany attend the deliberations to the Parliamentary Committee on National Security. Ms. Merkel called Mr. Gilani to impress upon him the importance of Pakistan's participation at the meeting to make it meaningful. As Mr. Gilani was unwilling to budge on high-level participation, she suggested the Ambassador be permitted to represent Pakistan so that its seat at the table was not left vacant. In view of bilateral relations and the fact that the German Foreign Minister was among the first to personally call his Pakistani counterpart to express solidarity with Pakistan and condole the death of 24 Pakistan Army soldiers in the NATO firing at Pakistani outposts on Saturday morning, Mr. Gilani agreed to refer

the request to the Parliamentary Committee. Meanwhile, the formal communication to the U.S. asking it to vacate the Shamsi airbase has been sent with December 11 set as the deadline. Pakistan has released footage of two posts which came under fire from helicopters of the coalition forces in Afghanistan and wanted to know where the NATO casualties were in case there was firing from the Pakistani side.

EU to ban Import of Iranian Crude Oil

The member states of European Union (EU) on 4 January 2012, agreed in principle to ban import of Iranian crude oil to put pressure on Iran for its nuclear programme. However, the time-frame to implement this was not decided. The United States, which recently imposed fresh sanctions on Iran, has welcomed the news. Meanwhile, Iran has dismissed the threat of new sanctions and denies Western claims that it is trying to develop a nuclear weapons programme. Western powers accuse Iran of trying to develop nuclear weapons under the cover of a civilian energy programme. The EU is one of Iran's biggest markets for oil. This generates most of the Iranian government's revenue. China is the top buyer of Iranian oil. The EU is a political and economical union of 27 member states.

Ban lifted by Maldives on Spas

Maldives on 4 January 2012 lifted ban on spas in the upmarket tourist destination following its verification that these spas were not being used for prostitution. Earlier, it was alleged that these spas were the hub of prostitution. Following this, the tourism ministry ordered all massage centres to close six days ago. The tourism industry is an important foreign exchange earner and employer in the Maldives and the ban on spas could harm the industry. Maldives in 2011 received more than 850000 tourists.

Israel-Palestine talks

The Israel-Palestine talks ended in the first week of January 2012 with the international mediators from Quartet (the United Nations, the United States, the European Union, and Russia) and Jordan ended without any breakthrough in Amman, capital of Jordan. The talks and the outcome were positive and the two sides agreed to carry forward the discussions. The Amman round of peace talks may not have yielded a breakthrough, yet it has broken the ice between the Israeli and Palestinian sides to discuss resumption of the stalled peace talks. Israel charged the Palestinians with raging propaganda campaigns and uni-

lateral diplomatic initiatives against it while Palestine asked Israel to stop settlement construction and accept the 1967 borders. USA and Saudi Arabia inked an Agreement worth 29.4 billion US Dollars

White Paper by China

China on 29 December 2011 issued a white paper entitled China's Space Activities in 2011. The white paper is on the development of space industry since 2006 and the major tasks for the next five years. It was the third white paper on China's space activities. The white paper was issued by the State Council Information Office. China has made the space industry an important part of the nation's overall development strategy with the objective of exploring and utilizing outer space for peaceful purposes. The Major tasks, which were listed in the white paper for the next five years include space transportation system, Earth satellites, human spaceflights and deep-space exploration. The white paper stated that China would work together with the international community to promote world peace and development.

India wanted 358 items removed

India is one of only four countries which, during the first half of 2011, requested Google to remove content on the basis that it was critical of the government. Google refused to comply. The other countries were Thailand and Turkey -- where Google restricted local users from accessing the offending content -- and the United States, where it refused. Ac-

cording to Google's Transparency Report for January to June 2011, the Internet search giant received requests from the Indian government -- which seems to include State and Central governments, police and courts -- to remove 358 items. In a breakdown of reasons for such requests, 255 items were classified under the "government criticism" category. It is not clear if Google would classify offensive items about a political leader under the category of defamation or government criticism. Interestingly, the biggest chunk of this is accounted for by a single "request from a local law enforcement agency to remove 236 communities and profiles from [social networking site] orkut that were critical of a local politician." Google did not identify this politician, but it did state that "we did not comply with this request, since the content did not violate our Community Standards or local law." Google's statistics gain significance in the light of its alleged refusal to comply with the Indian government's recent demand to block the publication of incendiary hate speech from its sites. On Monday, Union Minister for Communications and Information Technology Kapil Sibal summoned executives of Google, Yahoo, Facebook and Microsoft for a meeting after they stonewalled repeated requests to block incendiary communal material being posted on social networking sites they operated.

However, Google's Transparency Report data seems to indicate that only 8 items were requested to be removed under the category of hate speech. Instead, 39 items were requested to be removed on grounds of defamation, 20 due to privacy and

security concerns, 14 due to impersonation, three identified as pornographic items, and one request due to national security reasons. However, the single largest category is government criticism; apart from the 236 items on orkut, the government also asked for 19 items on YouTube to be removed on these grounds. Overall, Google says it complied fully or partially with 51 per cent of the requests. "We received requests from state and local law enforcement agencies to remove YouTube videos that displayed protests against social leaders or used offensive language in reference to religious leaders," said the Google report. "We declined the majority of these requests and only locally restricted videos that appeared to violate local laws prohibiting speech that could incite enmity between communities."

Iranian Embassy shut down by UK

The United Kingdom shut down the Iranian embassy in London and expelled all its staff in retaliation to the storming of the British diplomatic compound by an angry mob. They were asked to leave the UK within 48 hours. The British government also shut its embassy in Iran and evacuated the staff. France and Germany have both recalled their ambassadors to Iran for consultations following the attack on the U.K. embassy in Tehran.

Arab League Observers in Syria

A team of 50 Arab League Observers arrived in Damascus in Syria on

26 December 2011. The team consisting of experts from Algeria and Tunisia is led by Sudanese General Mustafa Daby. It would take about a week for Arab League to find out if the peace plan is being implemented in totality. The Arab Observer mission to monitor the implementation of League mediated peace plan would visit the worst hit cities in phases. However, the group will maintain an element of surprise by only announcing the specific areas they would be visiting on the same day of departure. The 50-member group consists of politicians, lawmakers and military officials. They will split themselves into ten groups for different cities. The team is likely to visit Homs amidst reports of killings of 23 people by the security forces.

Iranian Exiles in Iraq to be relocated The United Nations (UN) and the Iraqi Government on 24 December 2011 signed an agreement to relocate Iranian exiles living in a camp in northeastern part of Iraq. The Iraqi government has been insisting on closing the camp by the end of this month. Under the agreement, UN High Commission for Refugees will monitor the relocation while Iraqi Government will be responsible for their security. UNHCR would decide the refugee status for the residents of Ashraf here. This will be the first step toward resettlement to the third countries other than the native or the host countries. Camp Ashraf was the base of dissident Iranians led by the People's Mujahedeen Organization of Iran. The group moved to Camp Ashraf during the regime of Saddam Hussein and sided with Iraq in the war against Iran in the 1980s. The camp, now home to over

3400 dissident Iranians will be shifted to Camp Liberty, a former U.S. military base near the Baghdad International Airport.

CSTO agreed to Tighten Rules

The leaders of the CSTO (Collective Security Treaty Organisation) nations on 21 December 2011 agreed that the deployment of foreign bases in their territory would be done with the approval of all partners of the defence alliance. The CSTO summit was held in Moscow. Besides Belarus and Kazakhstan, CSTO includes Armenia, Russia, Tajikistan, Kyrgyzstan and Uzbekistan. Kazakhstan succeeded Belarus as the President of CSTO. However, the CSTO agreement does not apply to existing facilities such as a German air transit facility in Uzbekistan, French military aircraft in Tajikistan and US transit centre in Kyrgyzstan.

A unique protest in China

It is the farmers who are usually evicted in land conflicts in China's villages. But in the southern Chinese village of Wukan this week, a first-of-its-kind rebellion by 20,000 villagers over a land conflict has forced out the entire local government, Communist Party leadership and police forces, sparking clashes that resulted in an unprecedented siege of the village, located in prosperous southern Guangdong province, on Wednesday. According to accounts from witnesses posted on Chinese websites, the village has now been surrounded by thousands of riot police, while villagers had barricaded

themselves in by blocking roads with trees and rocks. The siege of Wukan was the denouement of more than three months of protests over land acquisition, seen as the biggest driver of the more than 180,000 "mass incidents" Chinese authorities record every year.

Local authorities had recently appeared willing to address grievances over what villagers said was inadequate land compensation, when they welcomed a group of residents, elected by the local community to represent the farmers' interests, to negotiate. However, the chief negotiator, Xue Jinbo, was subsequently held by authorities and died in custody this week. The Lufeng city government, which oversees Wukan, said in a statement he died of heart problems, though Wukan's residents widely suspected he was murdered while in custody. Following Xue's death and after months of stalled negotiations with local officials, the residents of Wukan decided enough was enough, storming the local police station and clashing with police. By Wednesday, authorities had been driven out of the village, with both the local police station as well as the Communist Party's local offices reported as being deserted, and Wukan village — in a likely first in China's modern history — being entirely controlled and administered by its residents.

Villagers in Wukan have demanded that officials return Xue's body, as well as suspend plans to acquire lands for a development project. It remains unclear whether the local officials will concede to the demands, or on the other hand use greater force to disperse the pro-

tests. This week's incident came as China's highest leaders met in Beijing for an annual economic work conference. The meeting, chaired by President Hu Jintao, concluded with a declaration that the focus of China's economic development in the coming year would be "making progress while maintaining stability."

Hillary Clinton visited Myanmar

Making a diplomatically risky trip to the long-isolated Southeast Asian nation of Myanmar, U.S. Secretary of State Hillary Rodham Clinton said she wanted to see for herself whether new civilian leaders were truly ready to throw off 50 years of military dictatorship a test that includes rare face-to-face meetings with former members of the junta. During her visit, Ms. Clinton will also encourage Myanmar to sever military and nuclear ties with North Korea. Ms. Clinton arrived in the capital of Naypyidaw on the first trip by a U.S. Secretary of State to Myanmar in more than 50 years. She is to meet senior Myanmar officials on Thursday before heading to the commercial capital of Yangon, where she will see opposition leader Aung San Suu Kyi.

Most Uncharitable Nation in South Asia is India

As per the Charities Aid Foundation's World Giving Index, India ranked as the most uncharitable nation of South Asia in 2011. India is the worst performer in South Asia with a global ranking of 91. India was ranked at 134 in 2010. Pakistan was ranked

to 34th position in 2011 while Sri Lanka ranked 8th. Bangladesh was placed at 78th position and Nepal at 84th. Thailand was the most generous nation, with 85 per cent of its people. The United Kingdom was the second most generous nation, with 79 per cent regularly giving to charity. Charities Aid Foundation's World Giving Index ranked nations on the strength of monetary donations and charitable acts.

Switzerland may Free Nuclear Smugglers

In an unexpected turn of events, Swiss authorities announced a decision to enter into a plea bargain with the notorious Tinner family members, who have been in jail over nuclear smuggling charges in the illicit network of disgraced Pakistani scientist Abdul Qadeer Khan. The Tinnners, Friedrich and his two sons Urs and Marco, were also accused of being informants for the CIA and one of the father-sons team was actually said to have been a CIA contractor. The Office of the Attorney General of Switzerland has noted that it had formally filed charges against the Tinnners under the War Material Act, an indictment based on their alleged aiding of "the illegal nuclear weapons programme of an unknown state through various activities".

However, the Swiss authority also sought to close the case against the Tinnners after the courts found verdicts of guilt "in relation to offences under the WMA and against one of the sons for forgery of documents". The prosecutors said the proceedings in respect of other offences had already been dropped and the court

was "requested to accept a plea bargain between the parties covering sentences, the allocation of costs, the forfeiture of assets and other matters".

Sanctions on Libya lifted by USA

The USA government on 16 December 2011 lifted most of its sanctions on Libya, unfreezing some of Libya's assets held in the United States. The USA government freed about 30 billion dollars in assets owned by the Libyan government and 2 Libyan banks that had been blocked since February. But holdings of the late leader Muammar al-Qadhafi and his family, as well as those of his aides, will be kept frozen. The US decision coincided with a similar action by the UN Security Council, which decided to end a freeze on the assets of Libya's financial institutions, including the central bank.

Fai Pleads Guilty to Conspiracy

Syed Ghulam Nabi Fai (62), a Kashmiri-origin U.S. citizen arrested by the Federal Bureau of Investigation on July 19, 2011 for allegedly acting as an unregistered lobbyist of Pakistan's Inter-Services Intelligence, pleaded guilty to conspiracy and tax violations. Fai's guilty plea pertained to a decades-long scheme to conceal the transfer of at least \$3.5 million from the government of Pakistan to fund his lobbying efforts in America related to Kashmir, the U.S. Department of Justice (DoJ) said in a statement. Specifically Fai pleaded guilty on two counts of "criminal information," the DoJ re-

ported, explaining that the first count was conspiracy to falsify, conceal and cover up material facts he had a duty to disclose; and to defraud the Treasury Department by impeding the lawful functions of the IRS in the collection of revenue. The second count to which he admitted guilt was the charge of endeavouring to impede the administration of tax laws. In a case that rocked the already dismal U.S.-Pakistan relationship over the summer the arrest of Fai was followed by revelations that he had served as the Director of the Kashmiri American Council (KAC), a non-governmental organisation in Washington, D.C.

NATO ended its Training Mission in Iraq

NATO ended its training mission in Iraq on 17 December 2011. The mission was aimed at assisting in the development of Iraqi security forces training structures and institutions. It was comprised of 120 soldiers from 12 countries. All of them will leave by the end of 2012. The move follows a day after US military handed over the last military base in Iraq and officially announced shutdown of its operations in the country.

Earlier, the alliance had been asked by Prime Minister Maliki to extend its training mission until the end of 2013 and it had accepted the request in principle. However, Baghdad made it clear that it can't grant immunity to the soldiers on its own as the matter has to be taken to the cabinet and then parliament for approval.

Sanctions on Libya's Central Bank lifted by UNSC

The UN Security Council on 16 December 2011 lifted sanctions on Libya's central bank and the country's foreign investments banks. The move is aimed at easing the current cash crisis in Libya. The United States has also lifted most of the sanctions against Tripoli. The Libyan banks' assets abroad were frozen in early 2011 as part of sanctions against former Libyan leader Col. Muammer Gaddafi. The USA rolled back most sanctions on the government of Libya to keep its commitment to the Libyan people.

OPEC to increase its Production

OPEC, (The Organisation of the Petroleum Exporting Countries) in its summit held in Vienna, on 14 December 2011 decided to increase its production ceiling to 30 million barrels a day, which is the first change in three years. Earlier, the production output was 24.88 million barrels per day. OPEC agreed to the new limit but it won't set individual quotas for each member country. OPEC is increasing its quota to match up actual production. The last OPEC summit in June failed to reach consensus when six members including Iran and Venezuela opposed the idea to pump more oil by Saudi Arabia and three other Gulf countries, who increased their oil production to make up for Libyan exports which was stopped following the civil war.

OPEC will need to produce 30.1 million barrels a day in 2012 to balance

world supply and demand of oil. OPEC is an organisation of twelve oil-exporting countries consisting of Iran, Iraq, Kuwait, Qatar, Saudi Arabia, the United Arab Emirates, Nigeria, Angola, Venezuela, Libya, Algeria and Ecuador. The organisation has its headquarters in Vienna since 1965, and hosts regular meetings among the oil ministers of its member nations.

India signed Loan Agreement with ADB

The Government of India and the Asian Development Bank (ADB) on 15 December 2011 signed an agreement for the first tranche (113 million US dollars) under the 350 million US dollars Himachal Pradesh Clean Energy Transmission Investment Programme, which is a multi-tranche financing facility. The total estimated investment cost of the programme is 437.85 million US dollars which includes financing of 87.85 million US dollars by the state govt. of Himachal Pradesh. The programme is for the upgradation of transmission system to help Himachal Pradesh take greater advantage of its vast hydropower resources. It will help expand the supply of power to industry, commerce and households, within and outside the state, and thereby contribute to job creation and poverty reduction.

US Mission in Iraq ended

The US military officially ended its mission in Iraq on 15 December 2011. As per Pentagon statistics, approximately 4487 US soldiers lost their lives in Iraq war, with another 32226 Americans wounded in action.

Despite the official declaration of ending its mission in Iraq, US military still has two bases in Iraq and 4000 troops. While in 2007, there were 505 bases and more than 170000 troops. However, these two military bases will be closed and the final US troops will be withdrawn by 31 December 2011.

Veiled Women barred From taking Oath of Citizenship by Canada

The Government of Canada announced on 12 December 2011 that women who aspire for Canadian citizenship can't wear burqa or Islamic hijab when they take oath of citizenship. Belgium, France, Australia and Netherlands have also banned women from covering their face in public. The government received complaints from lawmakers and judges that they found it difficult to know whether women who masked their faces were actually reciting the oath or not.

4th International Tax Dialogue

The 4th International Tax Dialogue (ITD), a global conference on Tax and Inequality was inaugurated by the Finance Ministry of India from 7 December to 9 December 2011. Indian Finance Minister Pranab Mukherjee inaugurated the three-day Tax meet. More than 400 senior tax policymakers from almost 90 countries attended it including Deputy Managing Director of the International Monetary Fund – Min Zhu, World Bank Vice President – Otaviano Canuto, and Deputy Secretary General of the Organization

for Economic Cooperation Development – Rintaro Tamaki. The ITD is a joint initiative of various organisations working on tax issues – the IMF, the OECD, the World Bank, the European Commission, the IADB, and CIAT. This conference provides an opportunity to address how taxation can be seen as a part of the solution to growing inequalities in income and wealth around the world. The use of plenary and parallel sessions, with active country participation, allows a peer dialogue between Ministers of Finance and Heads of Revenue Administration internationally.

Issues discussed

- Design of growth-enhancing and equitable tax systems
- Administrative challenges, issues and solutions for fair tax systems
- Income taxes, progressivity and inequality across regions
- Fair tax systems: vital for state-building and an exit from aid dependency
- Informality, inequality and the Role of the tax systems
- Gender friendly tax systems and inequality
- Taxation of elites and inequality

Highlights

- More global cooperation is required to tackle black money in India: annual illicit capital outflows from emerging and developing economies has been estimated at \$725-810 billion
- Direct Taxes Code (DTC) has been proposed in India: DTC seeks to replace the archaic Income Tax Act, 1961 and thereby modernize the taxation regime. It's supposed to be implemented from 1 April 2012
- Uruguay signed 7 new agreements

providing for the exchange of tax information.

Japan decided to Impose Sanctions Against Iran

Japan announced on 9 December 2011 that it is imposing a fresh round of financial sanctions against Iran. Japan will freeze the assets of 106 organizations, one individual and three Iranian banks.

More than 350 Iran-based entities are now subject to Japanese sanctions. However, the move will not restrict imports of Iranian crude oil, a step many Western nations have been urging. Resource-starved Japan relies on Iranian oil for 10 percent of its energy supply.

New Sanctions against Syria by Turkey

Turkey on 8 December 2011 announced a new set of sanctions against Syria. Turkey would impose 30 percent tax on goods coming from Syria. The move as a response to Damascus imposing 30 percent customs duty on goods imported from Turkey besides suspending the free trade agreement with Ankara. Turkey earlier announced a series of economic sanctions on Syria for its crackdown on anti-regime protests. These include an immediate ban on transactions with the Syrian Government and its central bank and freezing the Syrian government assets in Turkey. Turkey has also been seeking alternative routes to bypass Syria for trade with the Middle East. The Turkish government was considering three alternative routes through Egypt's Alexandria, Lebanon and Iraq to bypass Syria.

Austerity budget For 2012 Approved in Greece

Greek Parliament on 7 December 2011 approved a budget for 2012 pledging tough fiscal goals demanded by European Union partners in return for fresh loans. The austerity budget projects a modest primary surplus excluding interest payments on debt. A broad majority of the parties backing Lucas Papademos' caretaker administration secured the economic blueprint's passage by 258 votes to 41, after the vote concluded. Greece has been relying on loans from other eurozone countries and the IMF (International Monetary Fund) since May 2010. In return, Greece cut salaries and pensions and hike taxes to reduce budget deficits.

by the Asoka Mission. The new body was named as the International Buddhist Confederation which was decided to be based in India as Buddhists all over the world recognize India as the home of Buddha. This move could be proved to be an important one for a diplomatic row between India and China.

New International Buddhist Organization in India to be setup

The first Global Buddhist Congregation which was aimed to provide a joint platform to Buddhist communities across the world and also to impact geo-politics in Asia was concluded in New Delhi on 30 November 2011. The four-day congregation decided to set up a new international Buddhist organization in India. It was attended by heads and representatives from Buddhist Sanghas, national Buddhist federations, organizations and institutions from 46 different countries of the world. The international Buddhist organization in India is to serve as a common platform for Buddhists worldwide. The congregation in India was organized

Economic Issues

Foreign Exchange Reserves slipped below \$300-billion

According to data released by the Reserve Bank on 6 January 2012, foreign exchange reserves fell by over \$4.18 billion to \$296.69 billion, slipping below the long-held \$300-billion mark in the week ended 30 December 2011. The drop in the reserves was attributed to the fall in the core foreign currency assets (FCAs) and gold reserves. The overall reserves slipped by \$1.23 billion to \$300.86 billion in the previous reporting week. FCAs, a major component of the forex kitty, fell by \$2.72 billion to \$262.93 billion for the week ended 30 December. Gold reserves were down by \$1.42 billion to \$26.62 billion. Faced with massive volatility in the rupee the value of which eroded by 20 per cent since August 2011, the apex bank resorted selling dollar reserves to limit or arrest the depreciation. The reserves declined by \$24 billion since early September 2011. The foreign exchange kitty stood at \$321 billion on 2 September 2011. The dip was primarily due to revaluation in foreign currency assets and a fall in the value of gold reserves.

Two strong reasons were identified for the fall in the reserves:

- The first one is the continuous intervention by the regulator to curb

extreme volatility in the rupee.

- The second reason is the dollar has been appreciating against all currencies.

Special drawing rights (SDRs) and the reserve position in the International Monetary Fund (IMF) also fell. While SDRs came down by \$19 million to \$4.4 billion, the reserve position in the IMF was down by \$12 million to \$2.7 billion. Some experts opined that the dip in foreign exchange reserve also resulted from the payout on account of government expenditure might be accentuating the fall. While during September-December 2011, fall in the foreign exchange reserves was around \$24 billion, the reserves fell by \$34 billion in the comparable period of 2008.

ADB Loan to Finance Road Projects in Naxal-hit Areas

The Union government in January 2012 cleared an external loan to finance part of the programme launched by the Ministry of Rural Development in left wing extremism-affected villages. The clearance is for a loan of \$500 million from the Asian Development Bank (ADB) to speed up construction of rural roads. Union Ministry of Rural Development (MoRD) issued directions for negotiating and early signing of the

loan, which his Ministry to gather resources to give thrust to the Pradhan Mantri Gram Sadak Yojana (PMGSY). The ADB, which has already extended a loan of \$800 million was petitioned with a fresh proposal for rural connectivity investment programme to construct or upgrade 7000 km of roads connecting eligible habitations in Maoist-affected States of Bihar, Chhattisgarh, Madhya Pradesh, Odisha, West Bengal, besides Assam where too the PMGSY has progressed with little to cheer.

The demand for the loan was made in the backdrop of the MoRD's multi-winged programmes in the left wing extremism-affected areas, under which Central forces assist execution of welfare and development schemes to wean the local people from the path of naxalism. The MoRD has been providing incentives and assistance to the local people, particularly tribals, to reduce poverty and ensure economic growth of the region. Rural connectivity is considered pivotal to the success of this stratagem. As per the programme proposed by the MoRD, the Union government will supplement with a contribution of \$127.6 million, in addition to the \$5000 million to finance the project that includes setting up of training and research centres pertaining to rural roads.

IRDA introduced Uniform Asset-liability Management Norms

Insurance regulator IRDA on 4 January 2012 introduced uniform asset-liability management norms for market players to ensure their solvency. Insurance Regulatory and Development Authority (IRDA) announced a broadly-defined uniform framework for reporting asset liability management activities adopted by life and non-life insurance companies. The regulator also asked firms to undertake stress tests to ascertain their ability to meet financial obligations in the event of a crisis. IRDA has issued these guidelines to bring about uniformity in the ALM norms being followed by both life and non-life insurance companies.

IRDA guidelines: The IRDA guidelines require the ALM (asset liability management) policy to be approved by the board of the insurer. Such board-approved policy is to be submitted to the IRDA within 90 days. While approving the ALM policy, the board is to take into account the asset-liability relationships, the insurer's overall risk tolerance, risk and return needs, solvency positions and liquidity requirements. The guidelines also make it mandatory for the board to frequently review the ALM policy of the insurer. Any change in the policy must be reported to the regulator. Under the uniform framework, insurers have to put in place an effective mechanism to monitor and manage their asset-liability positions. The objective is to ensure that their investment activities and assets po-

sitions are in sync with their liabilities, risk profiles and solvency positions. The guidelines, which would come into effect from 1 April 2012, make it mandatory for insurance companies to prepare an ALM policy as well as get it approved by the Insurance Regulatory and Development Authority (IRDA) by end of March 2012.

Benefits of ALM Policy

The Asset-Liability Management (ALM) norms are critical for the sound management of the finances of the insurers that invest to meet their future cash flow needs and capital requirements. The ALM policy will enable the insurers to understand the risks they are exposed to and develop ALM policies to manage them effectively. The ALM can be used to measure the interest rate risk faced by insurers.

No Floating Interest Rates on Small Savings Schemes

The Finance Ministry on 4 January 2012 clarified that the rates applicable on small savings instruments schemes would be announced on April 1 each year and the rate would remain valid till the maturity of the scheme. The Ministry stated that barring the Public Provident Fund (PPF), the rates of interest on all small savings schemes will remain fixed throughout the tenure of investment. To clear the confusion over the returns on investment in small savings schemes, the Finance Ministry pointed out that the rate prevailing at the time of investments will remain fixed and unchanged till

the maturity of the investment. Any revisions in interest rates in the subsequent years would only be applicable to the investments made in the relevant period. However, the rate of interest for the 15-year PPF scheme would not remain fixed for the entire period as the interest accruals in the PPF account each year would vary, depending on the interest rate announced for that particular year. For PPF, the interest rate fixed every year will be applicable to all PPF accounts.

The government had hiked the interest rates on small savings deposits schemes of various maturities with effect from 1 December 2011 to channel the outflow of funds from small savings schemes administered by the National Small Savings Fund (NSSF) in view of the investor preference for bank term deposits.

The clarification from the Finance Ministry came in the face of fears that the revision of interest rates on small savings schemes from 1 December 2011, are floating rates and that the rates will undergo change in sync with fluctuations in yields on government securities. It had also hiked the interest rates on PPF deposits from 8 per cent to 8.6 per cent while raising the ceiling on annual contributions to the fund to Rs.1 lakh from Rs.70000. Interest rates on Post Office Savings Accounts rose to 4 per cent from 3.5 per cent. Similarly, interest rates on deposits of various maturities of one year, two years and five years too were raised from December.

DoT emphasised on Capacity Constraint

The report of the Department of Telecommunications, prepared by the working group on Telecom for the 12th Five Year Plan (2012-17), emphasised on the urgent need for creating a secure infrastructure for government communication. The security of government communication need to be ensured by an alternative mechanism because neither is it advisable to wait for such a mandating and capacity building nor is it appropriate to rely on the level of security provided by such a scheme given that communication will continue to remain in the open domain of Internet. The report highlighted the capacity constraint of the current Indian system that allows traffic to flow outside the country. As per the report an investment of Rs.450 crore is needed to develop and deploy a pan-India secure network and network-based services such as email, VoIP mobile communication through a survivable and available network architecture for secured communication for government use. Rs.300 crore is to be spent on establishing a fixed and wireless communication system for high security of classified government communication, Rs.100 crore would be spent for operational expenditure for the next five years and Rs.50 crore for research and development.

The Defence Research and Development Organisation (DRDO) has an internal system of communication that acts like a private Internet system, connecting various centres working on crucial defence projects, thus securing it from any kind of hacking or interception. Also, the

Defence Scientific Information & Documentation Centre (DESIDOC)'s main function is collection, processing and dissemination of relevant technical information for DRDO scientists. It also provides secure e-mail and Internet connectivity to DRDO labs through the networks of ERNET (of Dept. of Electronics) and NICNET (of the Planning Commission).

Liquidity Eased by RBI

The Reserve Bank of India on 3 January 2011 decided to conduct an open market operation (OMO) to inject more liquidity into the system. The RBI will buy up to Rs 12000 crore of government bonds via open market operations on 6 January 2012, including the 10-year paper which till recently was the benchmark paper. The central bank has decided to ease liquidity by buying back gilts for an amount of R10,000 crore in the backdrop of banks accessing the Reserve Bank of India (RBI)'s borrowing window for more than R1 lakh crore each day. RBI announced an auction for R10,000 crore worth of bonds, otherwise known as open market operation (OMO).

The OMO announcement came after the market trading hours. the Reserve Bank of India decided to conduct open market operations consistent with the stance of the monetary policy and based on the current assessment of prevailing and evolving liquidity conditions. Banks have been borrowing in excess of R 1 lakh crore a day from the RBI's liquidity adjustment facility (LAF) or repo window. The liquidity deficit in the system in recent weeks has been way beyond the limit of 1%

of the net liabilities of the system, or around Rs 55000 crore.

SEBI allowed Auctioning of Securities through Stock Exchanges

The capital market regulator SEBI on 3 January 2012 allowed auctioning of securities through stock exchanges and introduced a new method for institutional placement of stocks. The move was directed to kick-start government's divestment programme as well as help promoters of companies to sell a part of their holdings. As per the auctioning route, a special window can be used by promoter stakeholders to sell at least 1% of the paid-up capital of a company. It is similar to the block-deal mechanism for secondary stock market transactions, but with lesser restrictions. The auction method can be only used by promoters of top 100 companies based on average market capitalisation for sale of their stakes.

Institutional Placement Programme
Under the institutional placement programme (IPP), shares can be sold only to qualified institutional buyers. Exchanges will provide a separate window for the offer for sale of shares which will co-exist with the normal trading hours. promoter or promoter group of companies however will not be allowed to bid for the shares. Allotment will be done either on price priority or clearing price basis proportionately and would be overseen by the exchanges. SEBI's measure is considered to be very progressive step towards creating an organised and effective mechanism that will not only facilitate fund raising but also

assist companies to comply with the listing norms in a non-disruptive manner. There shall be at least 10 allottees in every IPP issuance. No single investor shall receive allotment for more than 25% of the offer size.

Bill to Amend Forward Contracts Regulation Act 1952

The Parliamentary Standing Committee submitted its report on a bill to amend the Forward Contracts Regulation Act 1952. Parliamentary Standing Committee on consumer affairs, food and public distribution, chaired by Congress MP Vilas Baburao Muttemwar, submitted its report on the FCRA (Amendment) Bill 2010 to Parliament on 22 December 2011. The current department-related standing committee (DRSC), set up in 2009, was asked by the Lok Sabha speaker in December 2010 to prepare a report on the bill and submit it to the Lok Sabha Secretariat. The committee in its report recommended a doubling of the maximum penalty for trading rule violations to Rs 50 lakh. The standing committee report suggested raising the upper limit on penalties for offences like insider trading to Rs 50 lakh from Rs 25 lakh stipulated in the Forward Contracts Regulation Act (FCRA) Amendment Bill 2010. Insider trading involves using unpublished price sensitive information for personal gain.

Report

The report recommended that options be introduced for the benefit of stakeholders. The inclusion of the clause was one of the reasons why

the bill in its earlier avatar during the UPA I regime faced resistance. Those who had opposed the bill then especially the Left parties argued that options would increase speculation in commodities. The report suggested that options will actually make it easier for farmers and smaller users to participate in the derivatives market as trading lot sizes will be lower than in futures contracts, where the minimum traded quantity for most farm products is 10 tonne.

investing in an option also tends to minimise losses as only the premium to buy (call option) or sell (put option) is forgone in the event of prices moving adversely. a futures position taken by a trader is on the other hand marked to market daily. Marking to market involves daily settlement of the difference between the prior agreed price and the daily futures price. It can thus lead to huge losses alongside supernormal profits.

Implementation of Levy on Railway Freight Service deferred

The implementation of levy on railway freight service was put off once again in the backdrop of high inflation. The levy is now likely to come into force from 1 April instead of 1 January as announced earlier. The levy on transport of goods by rail was deferred for the sixth time. Finance Minister Pranab Mukherjee in the 2010-11 Union Budget had brought transport of goods by railway under the service tax net from 1 April 2010. However, the proposal was vehemently opposed by Railway Ministry fearing adverse impact on

goods movement, forcing the government to defer it repeatedly. Railway Ministry is of the opinion that any levy on freight service would adversely impact the industry. Movement of coal and cement among others goods would become costlier with the imposition of service tax.

RIL's \$1.529 billion Investment Plan approved

The Union government on 3 January 2012 approved Reliance Industries' (RIL) \$1.529 billion investment plan for developing four satellite fields in the flagging KG-D6 block. RIL's investment plan will boost falling output in the Krishna-Godavari Basin KG-D6 block. The investment proposal was signed by the three partners in the block- RIL, UK's BP Plc and Niko Resources of Canada and the representative of DGH. The KG-D6 block oversight committee, which includes officials from the Oil Ministry and its technical arm, the Directorate General of Hydrocarbons (DGH), met for the third time in three months on 3 January to finally approve the proposal. The MC approval, which is the final approval an operator needs before beginning work, put a cap on the cost of developing the four fields that surround the currently producing Dhirubhai-1 and 3 (D-1 & D-3) fields in the KG-D6 block. The cost cannot vary by more than 15%. The MC had at its two previous meetings in November and December 2011 refused to approve the field development plan (FDP) for the Dhirubhai-2, 6, 19 and 22 (D-2, D-6, D-19 and D-22) fields after the government representative raised certain objections. RIL agreed to cap spending on the four fields at \$1.529 billion, plus or minus 15%.

The four fields can produce 10 million cubic metres of gas per day by 2016, which will help shore up output from the block, which has seen a 35% decline in production in the past 15 months.

Export Duty on Iron Ore Exports raised

The Union government raised the ad valorem duty (export duty) on iron ore exports to 30 per cent from 20 per cent. The decision is expected to step up finances of cash-strapped government by around Rs 8500-9000 crore. The Federation of Indian Mineral Industries, the apex body of miners however complained that Indian ore would no longer be competitive internationally. The increase in export tax could lower the profit margin of Sesa Goa Ltd., India's largest iron-ore exporter by volume. Shipments from the South Asian country decreased 28% between April and November to 40 million tons, according to the Federation of Indian Mineral Industries.

Volumes were hit by a mining ban in the southern state of Karnataka, a freeze on sale of old stocks in western Goa state and transport bottlenecks in the eastern state of Orissa. India exported 97.64 million tons iron ore in 2012. The Supreme Court had in early 2011 banned mining in the major iron-ore producing districts of Karnataka to prevent illegal mining and environmental damage. In Goa, moves to reduce environmental impact and illegal mining affected production. The two states account for around 70% of India's iron-ore exports.

RBI allowed NRIs to hedge their Currency Risk in respect of ECB

The Reserve Bank of India on 29 December 2011 allowed non-residents to hedge their currency risk in respect of external commercial borrowings (ECB) denominated in rupees, with AD Category-I (authorised dealer) banks in India. The apex bank mentioned that the amount and tenor of the hedge cannot not exceed that of the underlying transaction. Besides, it should be in consonance with the extant regulations regarding tenor of payment or realisation of the proceeds. The NGOs (non-Government organisations) engaged in microfinance activities were permitted to avail themselves of ECBs designated in Indian rupee under the automatic route from overseas organisations and individuals as per the ECB guidelines. According to the RBI, once cancelled the contracts cannot be rebooked. The contracts may, however, be rolled over on or before maturity. On cancellation of the contracts, gains may be passed on to the customer.

Financial Package of Rs 257 crore Recommended for NEPA

The Board for Reconstruction of Public Sector Enterprises (BRPSE) recommended a financial package of Rs 257 crore to revive the sick newspaper unit NEPA. The initiative was taken after the government shelved its plan to divest majority stake in the company and revive it through a joint venture with the private sector. The government holds

97.75% in NEPA. BRPSE also favoured the waiving off NEPA's interest and statutory dues worth Rs 304 crore. The Board for Reconstruction of Public Sector Enterprises suggestion was made to NEPA's administrative ministry, the Department of Heavy Industry. BRPSE suggested the department to infuse Rs 175 crore in the form of fresh equity to meet part-finance of total expenditure of Rs 318 crore for Revival and Mill Development Plan (RMDP). It also recommended sanction of non-plan loan of Rs 22.48 crore towards cash loss from production for the first year of production. The Madhya Pradesh-based company suffered a loss of Rs 70.40 crore in 2010-11.

Union Government Quadrupled Limits on Loans

The Union government quadrupled (four times) the limits on loans that a bank's internal committee can approve. The government's move is expected to quicken credit clearance at 26 state-run banks, including the Bank of Baroda and Punjab National Bank. The government directed banks to set up a credit approval committee — comprising chairman, executive directors and three chief general managers who is to handle credit, finance and risk management functions. The group can approve credit proposals up to Rs 400 crore. Currently, any loan above Rs 100 crore has to be vetted by the management committee of the board, which meet once a month, or 20 days. Under the old regime, a management committee of the board, which included a Reserve Bank of India nominee and two independent

directors appointed by rotation, the bank's chairman and managing director and executive directors, took these decisions. The prescribed limit is applicable on Category A banks with a business of Rs 3 lakh crore, while smaller public sector banks can use the same structure to approve loans up to Rs 250 crore. If a loan under consideration is higher than these limits, it would be taken to the management board.

RBI Ordered Banks to Keep More Capital For Investments in Financial Entities

The Reserve Bank of India (RBI) ordered banks to set aside more capital for their investments in financial entities such as insurance with an objective to strengthen the ring fence around banks. However the move can strain capital resources which are increasingly getting scarce. The RBI proposed the raise in risk weight to prevent banks from getting affected because of their holdings in other financial entities. The banks are to set aside 25% more capital following the central bank raise of the risk weight for buying or holding of equity in financial entities. Banks' investments in paid-up equity of financial entities, even if they are exempted from the capital market exposure norms, will thus be assigned a 125 percent risk weight. The proposal is expected to lead banks, which at present set aside Rs 9 for every Rs 100 of investment in financial entities, to keep aside about Rs 11. RBI opined that consolidation in the banking sector would pave the way for stronger financial institutions with the capac-

ity to meet corporate and infrastructure funding needs, and to rescue distressed lenders. However, it prescribed a non-operative bank holding company structure to avoid creation of complex institutions.

Uniform Licence Fee of 8 % of AGR recommended

Telecom Commission, the decision-making body of the Department of Telecommunications recommended a uniform licence fee of 8 per cent of adjusted gross revenues (AGR). Uniform license fee of 8 % was recommended as against the prevalent rate of 6-8 per cent depending upon the type of service and circle a firm is operating. The Commission's move will put more financial pressure on telecom operators. The Telecom Commission is also likely to impose one-time charges on extra 2G spectrum that operators have been holding beyond the contractual limit of 6.2 MHz. The Telecom Regulatory Authority of India (TRAI) also recommended a charge of 8 per cent of AGR for deciding the license fee. TRAI recommended that each MHz of additional spectrum (beyond 6.2 MHz of contractual radio waves) held by operators should have one-time cost of Rs.4571.87 crore (pan-India). The Telecom Commission further specified that in future additional spectrum would be allotted through the auction route.

The Telecom Commission had accepted the TRAI recommendation on merger and acquisition (M&A), which according to the Commission would help consolidation of the mobile sector that currently has around a dozen players, the highest in the world.

The Commission accepted the TRAI's recommendations on spectrum sharing as well. The spectrum sharing would be permitted between any two licensees holding spectrum, subject to the condition that the total bandwidth would not cross the permissible limit under mergers. The permission would be for five years, subject to renewal for one more term of five years. As per the new regulation, pre-2008 operators will need to pay one-time additional spectrum charge. The operators are currently paying about 6-10%, depending on the circles they operate in. The new figure of 8% is much more than what the TRAI had earlier suggested at 6%.

Cheques to be issued conforming to Cheque Truncation System 2010 Standard

The Reserve Bank on 27 December 2011 directed all banks to issue cheques conforming to Cheque Truncation System (CTS) 2010 standard with uniform features from 1 April 2012 onwards. All banks providing cheque facility to their customers were advised to issue only CTS-2010 standard cheques not later than 1 April 2012 on priority basis in northern and southern region. The two-northern and southern region will be part of the northern and southern CTS grids respectively. CTS-2010 standard cheques are to be issued by banks across the country by 30 September 2012 through a time bound action plan. The Indian Banks Association (IBA) and National Payment Corporation of India (NPCI) were vested with the responsibility of coordinating and implementing

the uniform cheque standard across the country by all participating banks.

Need for the CTS

The introduction of new cheque standards 'CTS 2010' was needed on account of several developments in the cheque clearing: growing use of multi-city and payable-at-par cheques at any branch of a bank, increasing popularity of Speed Clearing for local processing of outstation cheques and implementation of grid based Cheque Truncation System (CTS) for image-based cheque processing etc.

Advantage of the CTS

The new cheque standard CTS 2010 with set of minimum security features will ensure uniformity across all cheque forms issued by banks in the country as well as help presenting banks while scrutinising and recognising cheques of drawee banks in an image-based processing scenario, RBI said in a notification. The homogeneity in security features is also expected to act as a deterrent against cheque frauds. Also, the standardisation of field placements on cheque forms would enable straight-through-processing both under CTS and MICR clearing.

RBI tightened the Capital Adequacy Norms for all NBFCs

The Reserve Bank on 26 December 2011 tightened the prudential norms for the non-banking financial companies (NBFCs) under which the NBFCs will have to account for risks towards off-balance sheet items while computing capital adequacy

requirement. The NBFCs can thus participate in the credit default swap market only as users. As users, the NBFCs would be permitted only to hedge their credit risk on corporate bonds they hold. However, they are not permitted to sell protection. They are therefore not permitted to enter into short positions in the credit default contracts. NBFCs are however permitted to exit their bought CDS positions by unwinding them with the original counter-party or by assigning them in favour of buyer of the underlying bond. RBI also tightened the capital adequacy norms for all NBFCs. The rule tightening exercise comes in the wake of their stepped-up exposure to off-balance sheet items. The RBI revised capital adequacy norms for non-banking finance companies (NBFCs) with an objective to improve their capacity and help manage off-balance sheet exposure. The regulatory framework was expanded to have greater granularity in the risk weights and credit conversion factors for different types of off-balance sheet items. In the normal course of their business, NBFCs are exposed to credit and market risks due to asset-liability transformation as the Indian markets are now more integrated with global ones.

Tea Imports Declined

According to the Tea Board data released in December 2011, tea imports declined by 14 per cent to 9.91 million kg in the April-October period of 2011. Imports of the brew fell by 15% to 14.15 million kg from 16.57 million kg in January-October 2010. The country had imported 11.55 million kg of tea in same period in 2010. India, the world's larg-

est consumer of tea imports tea leaves solely for re-export to other countries. The dip in imports therefore signals lower re-exports. The inbound shipments of tea from most countries, except Argentina, Iran and the UK, registered a decline in the first seven months of the 2011-12 financial year. India imports tea largely from Kenya, Malawi, Nepal, Argentina, Iran, Sri Lanka, China and Indonesia, among other countries. India is the second-biggest producer of tea in the world and accounts for about 28% of global output and 14% of trade. There are around 1600 tea estates in India and the industry employs more than two million people.

IT Sector created most Jobs in the last 5 Years

The information technology (IT) sector led by the top three listed companies, TCS, Infosys and Wipro, created the most jobs in the five years ending 2011 compared with other sectors. Increased employment in the sector was boosted by an over two-fold jump in aggregate revenue. The data is based on the hiring trend of a sample of 600 listed companies that reported annual financials along with headcount information since 2006. The findings provide a reflection of the changing trend in India's GDP composition. There was a marked shift from the agrarian phase to the services phase. The data revealed that the proportion of services sector jobs in the total headcount of the sample rose to 46.5% in 2011 from 41.8% in 2006. The sample companies also expanded the aggregate headcount by 48% to 43.8 lakh employees between 2006 and 2011.

IT Sector

The analysis by Economic Times (ET) Intelligence Group of the trend in job creation by the organised sector reflected the rising clout of services companies. Of the 14.3 lakh jobs created between Financial 2006 and 2011, over 8 lakh (56%) were added by companies in the services sectors, which includes banking and finance, healthcare, hospitality, technology, telecom, trading and retail. These companies created four out of seven jobs in the country over the past five years thereby outpacing the manufacturing sector. IT sector players led the service sector, adding as many as 4.5 lakh employees. TCS, Infosys and Wipro together added 2.4 lakh people, or more than half the total additions for the sector.

First Pan-India Satellite Survey

The first pan-India satellite survey jointly commissioned by Indian Sugar Mills Association (ISMA) and the National Federation of Co-operative Sugar Factories Ltd (NFCSF) pegged the cane area for 2011-12 crop year starting October at 51.82 lakh hectares (lh). For the first time the survey was carried out State-wise and district-wise for the area under sugarcane, through satellite mapping on such a large-scale. Satellite images of the cane area procured from the National Remote Sensing Agency, Hyderabad, were analysed using the Geographical Information Systems software by South India-based firm. A satellite mapping of sugarcane acreage carried out for the first time across India showed an increase of 3% over the government estimate. The data

showed acreage to be the same in Uttar Pradesh and higher by 3% in Maharashtra as compared to the figures projected by the ministry of agriculture for the two states. According to the satellite data, acreage for 2011-12 has been estimated at 51.82 lakh hectare. The figure is higher than the estimates made manually by the sugar industry at 50.79 lakh hectare, by the ministry of agriculture at 50.93 lakh hectare and the ministry of food and public distribution at 50.25 lakh hectare. India joined the ranks of major sugar producers such as Brazil and Thailand in leveraging remote sensing technology to estimate the cane area.

Illegal Mutual Roaming Agreements to be Scrap

India's telecom ministry on 22 December 2011 informed mobile phone operators that they must scrap illegal mutual roaming agreements that allow them to provide seamless nationwide 3G services. As per the ministry, the pacts that let the operators offer 3G services outside their licensed zones are in violation of terms and conditions of their licences.

The government complained that telecom operators were using the 3G roaming deals to offer services in areas where they have not paid for the spectrum. Leading mobile operators such as Bharti Airtel, Vodafone and Idea Cellular had struck deals with each other to offer ultra-fast 3G services in areas where they did not acquire spectrum in a costly bandwidth auction in 2010. The firms entered into the deals because none could afford nationwide 3G spec-

trum in the high-priced sale. Bharti has 3G bandwidth in 13 of India's 22 telecom zones while Idea has access in 11 areas and Vodafone's India unit in nine. The announcement by the ministry dealt a blow to the companies, which had hoped to recover their 3G auction payments by providing high-premium 3G data services across the country in India's fiercely competitive telecom market.

Earlier operators had noted that in case they could not offer nationwide roaming, the government should refund the sums paid for 3G spectrum or restage the auction as it would alter the basis on which 3G bids were made. Third-generation services, or 3G, allow mobile phone users to surf the Internet, video conference and download music, video and other content at a much faster pace than the current second-generation service offered in India.

The government had reaped \$15 billion from auctioning the 3G licences in 2010. Bharti and Idea paid 123 billion rupees (\$2.3 billion) for licences while Vodafone paid 116 billion rupees. Indian telecom companies which currently generate only small revenues from data services expect the market to grow exponentially as less than 10 percent of the 1.2 billion population has access to Internet at the moment.

India has some 881.4 million mobile and 33.2 million fixed-line subscribers with total teledensity at 76, up from 2.5 in 2000.

Moody's upgraded Credit Rating of Indian Government's Bonds

Credit rating agency Moody's on 21 December 2011 upgraded the credit rating of the Indian government's bonds from the speculative to investment grade. According to a release issued by the Finance Ministry, Moody's unified India's local and foreign currency bond ratings at Baa3. The ratings agency initially had separate rating for investors who choose to buy bonds in foreign currency and separate rating for those who have a rupee exposure. the ratings agency had a Baa3 foreign currency rating and a Ba1 local currency rating till September 2011.

Moody's Investor Service upgraded its local currency rating for Indian government bonds to Baa3 which is investment grade as compared to the earlier Ba1 which is junk or speculative grade. India's Baa3 rating incorporates credit strengths such as a large, diversified economy, robust medium term growth prospects and a strong domestic savings pool that facilitates the financing and refinancing of the government's relatively high debt burden. India's foreign currency bond ceiling is unchanged at Baa2, and the foreign currency bank deposit ceiling is Baa3. The local currency bond and bank deposit ceilings are unified at A1. In addition, the government's local currency short-term rating has been changed to P-3 from NP, indicating the government's ability to repay short-term debts.

Moody's expected India's growth downturn to persist for the next two quarters, but the GDP growth would

be above average with respect to the similarly rated peers. Giving the rationale for the upgrade, Moody's mentioned that diverse sources of Indian growth have enhanced its resilience to global shocks. The present slowdown could reverse some time in 2012-13, as inflation cools from the current 9 per cent levels. Moody's upgrade is expected to attract Foreign Institutional Investors (FIIs) to the Indian bond market and boost the gloomy economic outlook. The last time Moody's upgraded any Indian long-term sovereign debt instrument from the speculative to investment grade was in 2004.

India exited from \$1 trillion Group

Fears of continuing economic slowdown, lack of decision making at the centre, rising fiscal deficit combined with not-so-impressive revenue collections upset Dalal Street investors on 20 December 2011 leading to a 204 points loss in sensex to end at 15175. The loss of 204 points represented a 28-month low for the index and its fifth consecutive session of losses, during which it has lost 827 points, or 5.2%. The day's slide was triggered by FII selling which recorded a net outflow of Rs 526 crore, taking the month's total net outflow to about Rs 1300 crore. The Indian rupee which had weakened further to go below 53 to a US dollar level again, closed at level of Rs 52.89 on 19 December 2011.

The combined effect of the market's slide and the depreciation of the rupee forced India to exit from the select group of countries with a \$1 trillion market capitalization. With

BSE's market cap currently at Rs 52.53 lakh crore, India's market cap in dollar terms works out to \$993 billion. On 28 May 2007, when the rupee was showing unusual strength against the dollar and hovered around the 40 mark that India had first entered the \$1-trillion market cap league. However, lately the twin effect of rupee's weakness and the slide of the market combined to drag it below the trillion dollar mark. According to Bloomberg data, India's market cap so far in 2011 went down by 38%, making it the worst performing market among the 12 countries that were in the trillion dollar club.

India's Energy Security Under Pressure

As per a joint study by the Federation of Indian Chambers of Commerce and Industry (FICCI) and consultancy firm Ernst and Young, India's energy security is under severe pressure due to reasons like increasing dependence on imported oil, regulatory uncertainty and natural gas pricing policies. The report mentioned that a small pool of skilled manpower and poor upstream infrastructure are also exerting pressure.

Report

According to the report, there exists a dire need to address the supply issue through a slew of policy reforms, as well as to launch a massive awareness campaign on the demand side management, and the pricing of products to incentivise investments for raising domestic production. As per the Integrated Energy Policy of the Government, India's requirement of primary commercial

energy is projected to increase from 551 million tonne of oil equivalent in 2011-12 to 1823 mt of oil equivalent in 2031-32.

The increase in oil price by \$10 a barrel is likely to slow the GDP growth by 0.2 per cent and may inflate the current account deficit by 0.4 per cent. Also, the recent depreciation of the rupee raised the crude oil imports costs, impacting trade deficit and domestic inflation. Consequently the import of crude oil and oil products rose from \$50.3 billion in 2005-06 to \$115.9 billion in 2010-11. In the current financial year (till October 2011), oil imports touched \$75 billion. The country meets 73 percent of its fuel needs through oil imports.

Suggestions Made

The study suggested the need to introduce reform and favourable policies for the private sector to secure foreign oil and gas assets. India, though has surplus oil refining capacity, it still needs major investments to upgrade the existing production infrastructure. It also stressed on the need to shore up the energy security initiatives in an environment of unstable geopolitical situation in the Middle East and North Africa, from where India gets 60 percent of its oil imports.

DGH approved Cairn India's Proposal. The directorate general of hydrocarbons (DGH), the technical arm of the oil ministry approved Cairn India's proposal to commence production from Bhagyam, the second-largest oil field in the Rajasthan block. The company, which currently operates the block with a 70% stake, waited for a year to obtain approvals to start

production. The DGH gave its approvals to commence production from Bhagyam, along with both the management committee and the operations committee. The management committee comprises Cairn India, ONGC and representatives of the DGH and the petroleum minister while the OC is composed of only JV partners Cairn India and ONGC.

The representatives of the oil ministry also gave their in-principle nod to commence production. Currently, Mangala, the biggest of the 18 discoveries in the Rajasthan block, is producing 125000 bpd. Bhagyam is targeted to produce a peak output of 40000 bpd by the end of 2011, which would help Cairn achieve the approved peak output of up to 175000 bpd. The approvals were stuck for more than a year as previously, the ministry wanted all prior entitlement issues related to the Vedanta deal to be resolved before giving Cairn a go-ahead to start production from the oil field.

Indian Mobile Phone Market grew 12%

According to the International Data Corporation's (IDC) Quarter 3 2011 Mobile Phone Tracker release, the Indian mobile phone market grew 12% in units shipped in the July-September quarter of 2011 to clock 47.07 million units. Year-on-year too, there was a shipment growth of 13.8%. The shipments were propelled by the dual-SIM handsets, which grew by 25.2 per cent over the previous quarter (April-June). The mobile phone shipments witnessed a spurt, as vendors built channel inventories ahead of a long festival season. Dual-SIM handset shipments were notable with a sequen-

tial growth of 25.2% over the previous quarter (April-June quarter). However there was a sharp decline in the mobile service subscription adds during July-Sept 2011.

According to the release, the overall, smartphones shipment for the India market showed an impressive growth of 21.4% over the previous quarter and 51.5% year-on-year. This helped the segment grow its contribution to the mobile phone shipment to 6.5% in third quarter from 5.6% in the second quarter. From an operating system (OS) perspective, Android overtook Symbian to emerge as the top platform in India for the first time, with a share of 42.4% of the smartphone market. The platform (Android) saw a growth of 90% over the previous quarter. The Apple iOS consolidated further, with a 3.09% share of the smartphone market, compared to a share of 2.6% in second quarter (April-June) of 2011.

Repo Rate Unchanged at 8.5 %

The Reserve Bank of India on 16 December 2011 left its policy rate unchanged at a three-year high of 8.5 per cent. RBI paused the hike after 13 consecutive rate hikes since March 2010. The Reserve Bank of India kept its policy repo rate unchanged at 8.5 percent at its mid-quarter review two days after data showed November wholesale price index inflation at 9.11 percent, far lower than the 9.73 percent clocked in October. The RBI also left the cash reserve ratio unchanged at 6 percent, despite market speculation that it might cut the ratio in order to boost market liquidity. The central bank noted that while inflation remained

on the projected trajectory, downside risks to growth clearly increased. It reiterated that further rate hikes might not be warranted as the growth momentum was moderating.

Retaining its option to raise rates again if inflationary expectations persist, the RBI mentioned that the timing and magnitude of further action would depend on how things panned out on the inflation and rupee fronts.

RBI's policy statement stated that inflation risks remain high and inflation could quickly recur as a result of both supply and demand forces. Also, the rupee remains under stress. The central bank said that the GDP growth declined to 6.9 per cent in the second quarter (July-September) from 7.7 per cent in the first (April-June), and key deficit indicators worsened mainly due to higher expenditure and lower revenues. Noting that liquidity conditions were tight, consistent with the policy intent, the RBI mentioned that it would conduct open market operations as and when it felt the need for it.

SEBI Directed Intermediaries

Market regulator SEBI on 15 December 2011 directed intermediaries not to outsource their core business activities and compliance functions. According to SEBI, core business activities may include execution of orders and monitoring of trading activities of clients in case of stock brokers, dematerialisation of securities in case of depository participants, investment-related activities in case of mutual funds and portfolio

managers. Intermediaries would be responsible for reporting any suspicious transactions to the Financial Intelligence Unit or other competent authority in respect of activities carried out by the third parties.

Recommendation of SEBI's Committee on MF

A committee on mutual funds, constituted by SEBI in December 2011 recommended to the regulator's board to break down the bifurcation within the fee structure known as expense ratio. According to the committee the measure will allow mutual funds to manage their expenses better and possibly improve their profits. In the absence of bifurcations within the expense ratio, fund houses will try to reduce recurring expenses which, in turn, will increase their profitability. Currently mutual funds are allowed to charge up to 2.25% as expense ratio. Of the 2.25% charged as expense ratio, fund houses are allowed to accept only 1.25% as asset management charges. The remaining 1% has to be mandatorily used to meet recurring expenses, which include payment of annual trail fees, auditor & registrar charges and dealing charges to empanelled brokers.

Funds with large corpuses currently charge 1.75% as expenses charges. There exists scope for these funds to charge lower expense ratios. The SEBI panel also suggested that mutual funds, with higher assets under management, will have to bring down their expense ratio proportionately. SEBI was suggested to keep overall scheme expenses unchanged at 2.25% for schemes with assets under management not exceeding Rs 400 crore. Panel members also

proposed an alternative slab system, which will bring down expense ratio with a proportionate increase in the asset base of the fund. There will be no change in expense ratios of debt funds. The panel suggested SEBI to come out with wider slab limits which bring down expenses on large funds even further. Expense ratio is more than important in debt schemes where the rate of return is not high. In the case of equity funds, the expense ratio becomes critical in times of lacklustre markets.

CIL's Board approved Acquisition of Stakes

The world's largest coal miner Coal India Ltd (CIL's) board on 14 December 2011 approved a proposal to acquire stakes in unlisted firms overseas, provided the offers were valid. The proposal was approved in the wake of Finance Ministry's approval for the public sector firm to proceed with its plan to acquire unlisted firms overseas. CIL plans to take up three offers - in Australia, Indonesia and the US. The PSU put together a war-chest of Rs.6,000 crore for acquisition of mines. CIL sought clarifications from the Finance Ministry before entering into discussions with owners, having received proposals offering an IRR between 9 percent and 12 percent. CIL had request for a relaxation in the PSU guidelines stipulating a minimum 12 percent internal rate of return (IRR) on investments. In response to the request, the Finance Ministry mentioned that CIL could proceed with such proposals, if they are of strategic nature, and subject to government clearance. CIL also sought to sidestep the rule that only the mines of listed companies

should be acquired, which was permitted by the Finance Ministry.

RBI announced Non-direct Intervention Measures

The Reserve Bank of India announced non-direct intervention measures in the wake of steady weakening of the rupee against the dollar. The non-direct intervention measures are aimed at curbing speculative positions in the foreign exchange market. Re-booking cancelled forward contracts, whatever the type and tenor of the underlying exposure, by resident and foreign institutional investors has been disallowed. Forward contracts booked to hedge current account transactions regardless of the tenor were allowed to be cancelled and rebooked. Such facility was also available to hedge capital account transactions that were falling due within one year. The apex bank through the new measures made it clear that forward contracts once cancelled cannot be rebooked. The central bank also modified the currency risk hedging norms for importers and exporters.

Importers were earlier allowed to hedge currency risk on the basis of a declaration of an exposure based on past performance up to the average of the previous three financial years' actual import/export turnover or the previous year's import/export turnover, whichever is higher. Also, contracts booked in excess of 75 per cent of the eligible limit were to be on a deliverable basis and could not be cancelled. The apex bank revised these norms.

As a result of the revision the earlier 75 per cent facility stands reduced to 25 per cent of the limit as compounded by above for importers who avail themselves of the past performance facility. If importers have already used up in excess of the revised or reduced facility, they will not be allowed further bookings. The RBI also specified that this facility will be available on fully deliverable basis only. The RBI reduced the net overnight open position limit (NOOPL) of authorised dealers across the board with an objective to prevent speculations in the foreign exchange market. It asserted that the intra-day open position/daylight limit of authorised dealers should not exceed the RBI-approved NOOPL. The apex bank indicated that these arrangements would be reviewed periodically in line with the evolving market conditions.

49% FDI in Insurance Sector rejected

A parliamentary committee on 13 December 2011 rejected almost all the key changes proposed in the Insurance Laws (Amendment) Bill 2008, including the key reform to allow 49% foreign direct investment in the sector. The Insurance Laws (Amendment) Bill was introduced in the Rajya Sabha in December 2008 to bring about improvement and revision of laws pertaining to the insurance sector in the changed scenario of private sector participation and was subsequently referred to the standing committee. The panel headed by BJP leader and former Finance Minister (during NDA regime) Yashwant Sinha maintained that the move to hike the FDI cap in the insurance sector might not have

the desired effect and could expose the economy to global vulnerability. The standing panel pointed out in its report that the proposal to increase the FDI cap to 49 per cent in insurance companies appeared to have been decided upon without any sound and objective analysis of the status of the insurance sector following liberalisation.

Increased role of foreign capital it was feared would lead to the possibility of exposing the economy to the vulnerabilities of the global market, flight of capital outside the country and also endanger the interest of the policy holders. The government's move was also opposed by both insurance regulator IRDA and GIPSA on grounds that that foreign insurers would be at an advantage over their domestic counterparts in the matter of regulations.

Health insurance Business

The panel also rejected the proposal to halve the minimum paid up capital required to start exclusive health insurance business to Rs 50 crore. The committee mentioned that the amount may be inadequate as an insurance company needs to be fully equipped with modern infrastructure and other facilities. Another proposal to empower the insurance companies to appoint agents and do away with the system of licensing of agents by the regulator, IRDA, was rejected. The panel maintained the measure is inappropriate and fraught with the danger of leading to ineffective regulation of the profession, particularly in instances of unscrupulous act on the part of the agents as also insurance companies.

Profitability of Textile Companies to Improve.

CRISIL Research released its report on profitability of textile companies on 14 December 2011. According to the research firm, profitability of cotton yarn and man-made fibre (MMF) players are expected to improve over the next few quarters on account of decline in input costs and moderate demand growth. During the first quarter of 2011-12, the textiles companies witnessed severe profitability pressures which led to significant erosion in their market capitalisation. cotton yarn and MMF players have registered a negative return of 48% and 37%, respectively in the past one year. CRISIL Research opined that the current valuation of players discounts the current negative sentiments around the sector and offers good scope for upside. Also, stocks of ready-made garment (RMG) companies are fairly priced in spite of being at historical highs, as they offer relatively high and stable returns among the textile companies during the present uncertain times. The stocks of branded RMG companies have out-performed the S&P CNX NIFTY significantly and posted 25% return on a one-year basis.

The slow-down in demand in both domestic and export markets and the anticipation of a spurt in global cotton production resulted in sharp correction in cotton and yarn prices in the first half of 2011-12. This resulted in cotton yarn players reporting losses in the same period as they were carrying high cost cotton inventory from the last season. However, the sharp drop in cotton yarn prices also enhanced its price competitive-

ness vis-a-vis polyester (a substitute for cotton) thereby limiting the flexibility of MMF players to pass on the hike in the costs of their inputs, which are derivatives of crude oil. CRISIL Research covered seven textile stocks—Nahar Spinning Mills and Maharaja Shree Umaid Mills in the cotton yarn segment, JBF Industries, Sangam (India), Alok Industries and Shri Lakshmi Cotsyn in the MMF segment, Kewal Kiran in the RMG space. Of these, most companies have a valuation grade of 5/5, indicating that these stocks have a strong upside (more than 25%).

CCEA approved National Electricity Fund

The Cabinet Committee on Economic Affairs (CCEA) on 13 December 2011 approved national electricity fund to provide subsidy of 8466 crore rupees for projects of electricity distribution sector for a period of 14 years. The fund will be operational within a period of six months to one year. The fund is being set up to provide interest subsidy on loans to be disbursed to the distribution companies both in the private and the public sector. The objective is to improve the distribution network for areas not covered by Rajiv Gandhi Gramin Vidyutikaran Yojna (RGGVY) and Restructured Accelerated Power Development and Reforms Programme (R-APDRP) project areas.

Mobile Subscriber Base in India increased to 881.4 million

According to the data released by the regulator TRAI on 8 December 2011, mobile subscriber base in In-

dia increased to 881.4 million by October 2011 from 873.61 million in September 2011 registering a growth of 0.89%. The overall teledensity (telephones per 100 people) in India reached 76.03%. Telecom operators added 7.79 million mobile subscribers in October 2011, taking the total number of telephone users in the country to 914.59 million. The number of active mobile subscribers, according to the visitor location register (VLR) data, during the month of was 626.18 million. VLR numbers provide details on active customers at any given point of time, excluding switched-off and out-of-the-coverage area customers.

Performance by the Telecom Operators

The growth in the wireless category was led by Uninor, which added 2.66 million new users, taking its subscriber base to 32.31 million by the end of October 2011. Tata Teleservices on the other hand lost 0.93 million and its subscriber base stood at 87.83 million. The country's largest private operator Bharti Airtel added 0.94 million subscribers, taking its user base to 173.73 million. Vodafone added 0.92 million new customers to take its user base to 145.91 million. Idea Cellular and Aircel added 1.63 million and 0.48 million users, respectively, during the period. Idea's subscriber base stood at 101.81 million at the end of October 2011, while that of Aircel stood at 60.28 million. RCom (Reliance Communications) added 1.03 million new subscribers to take its user base to 148.11 million, while SSTL added 0.74 million new users to take its total userbase to 14.01 million. State-run telcos BSNL and

MTNL added 0.40 million and 31788 new users in October. The subscriber base of BSNL stood at 96.19 million and 5.61 million, respectively.

Mobile Number Portability (MNP)

As per TRAI's report, about 25.38 lakh subscribers submitted request for MNP in October 2011. Since the introduction of MNP in November 2010, about 231.66 lakh subscribers across India had submitted requests, till October, for changing their service providers while retaining their mobile numbers. In MNP Zone-I (Northern and Western India), maximum number of requests were received in Gujarat (22.39 lakh), followed by Maharashtra (19.10 lakh). In MNP Zone-II (Southern and Eastern India), maximum number of requests have been received in Andhra Pradesh (19.46 lakh) followed by Karnataka Service area (19.18 lakh). Broadband

Wireline category subscriber base declined to 33.19 million in October from 33.31 million in September. Broadband subscription reached 12.98 million in the reported month from 12.84 million in September 2011.

Coal Ministry decided to Auction 54 Blocks on

The coal ministry decided to auction 54 blocks on upfront payment basis. The ministry however might not offer mines to power companies. The ministry is currently considering a proposal to earmark blocks to states that can call competitive bids for power supply. The coal ministry also

decided that blocks will not be given free to government companies. Though competitive bidding route would not be applicable to centre and state government projects, PSUs will have to pay reserve price for coal blocks. Preference would be given to companies setting up end use projects in the state that hosts the coal block and agree to match the highest bid. The blocks lie in the coal belts of seven states of Chhattisgarh, Jharkhand, Maharashtra, West Bengal, Orissa, Madhya Pradesh and Andhra Pradesh.

Blocks with over 18,000 million tonnes of reserves is set to go under hammer in the first round of competitive bidding. The government has not awarded single coal or lignite block for captive use to private companies since October 2008. The coal ministry decided to initiate auction by putting the list of blocks on its website. Information on estimated reserves, exploration status and environmental clearances would also be provided. The ministry's objective is to avoid double bidding for power companies that after January 2011 have to participate in tariff-based bidding to bag power supply contracts from states.

ICICI's & IDBI's Launch of CDS

India's largest private lender by assets, ICICI Bank and IDBI Bank, the seventh largest public sector bank in India together launched India's first credit default swap (CDS) on 7 December 2011. CDS was launched seven days after the product was cleared by the Reserve Bank of India on 30 November 2011. Public

sector undertaking Rural Electrification Corporation (REC) bought the CDS cover for its Rs 5 crore loan from ICICI Bank. The launch of the CDS was a landmark transaction for the domestic corporate debt market and marked the formal introduction of local currency CDS market in India. IDBI Bank became the country's first PSU bank to underwrite a CDS transaction in the domestic market for managing credit risks associated with Indian corporate bonds.

This is the first transaction of its kind entered by any public sector bank with another bank in India on selling protection in the domestic market on corporate bonds. The central bank, RBI had issued prudential guidelines on CDS transactions on corporate bonds on 30 November 2011. The guidelines referred to CDS transactions underwritten by Indian operations of foreign banks, Indian banks and overseas branches/subsidiaries/joint ventures of Indian banks.

Benefits

The launch of the CDS market in India will encourage foreign institutional investors to invest in domestic corporate bonds. The investment in domestic corporate bonds will provide much-needed funding for projects, including infrastructure sector projects. Credit default swaps also will investors to transfer and manage credit risk in an effective manner through redistribution of risk. Such products are expected to increase investors' interest in corporate bonds and is likely to prove beneficial to the development of the corporate bond market in India.

What is CDS?

A CDS is similar to a traditional insurance policy where it obliges seller of the CDS to compensate the buyer in the event of a loan default. The agreement is that in the event of a default, buyer of the CDS receives the money which is equivalent to the face value of the loan and seller of the CDS receives the defaulted loan and with it the right to recover it at some later time.

ISDC for the Textile and Apparel Sector

With the inauguration of the first state-of-the-art ATDC-SMART (Skill for Manufacturing Apparels through Research and Training) in Egmore, Chennai, the Integrated Skill Development Scheme (ISDC) for the textile and apparel sector was launched by the Ministry of Textiles. The Ministry launched the project in association with the Apparel Training & Design Centre (ATDC), which was selected as a nodal agency for the project. The project aims to impart training to a workforce of about 256000 in the next two years. The ATDC-SMART project worth Rs 23 billion focuses on the core workforce requirements of the garment industry located across India. The importance of the Scheme can be judged from the fact that the apparel industry is the second largest employment provider in the country after agriculture.

Rural youth and women stand to benefit the most from the ISDC. The rural youth would be able to find gainful employment in areas near their domicile with the help of the imparted training. India's domestic

textile market is expected to grow to US\$ 60 billion and exports to US\$ 50 billion by 2015. By 2015 the sector is expected to create an additional 12 million jobs, nearly 40 per cent of which will be in the core production activities. The handicrafts industry employs 12 million people in India currently.

GPON Technology transferred to Telecom Equipment Makers

The Centre for Development of Telematics (C-DoT) on 5 December 2011 transferred indigenously-developed Gigabit Passive Optical Network (GPON) technology to seven telecom equipment manufacturers, including private players. The GPON technology was transferred to the telecom equipment manufacturers to give the much-needed push to broadband penetration in India. The government transferred this technology to seven manufacturers in public and private sectors — ITI, Bharat Electronics, VMC Systems, United Telecoms, Sai InfoSystem (India), SM Creative Electronics. Transfer of technology was also signed with Tejas Networks for customised development.

What is GPON Technology ?

The GPON technology is a pivotal component required for broadband connectivity over optical fibre.

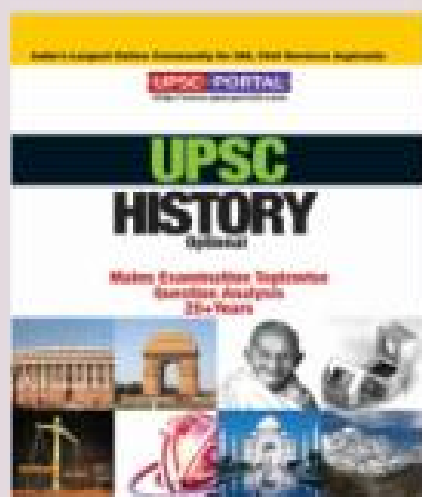
C-DOT indigenously designed and developed GPON technology, which can be used to provide triple play (voice, video and data) through fibre-based networks. The present GPON standards specify 2.5 Gbps

(Gigabit per second) downstream and 1.25 Gbps upstream data capability to customer premise. Apart from urban areas, the large data carrying capability is important for Indian villages too where prevailing low literacy levels will require better dissemination of information with greater graphic and audio content. Besides, voice telephony, high speed Internet access and IPTV, the C-DOT GPON has provision to carry cable TV signal too. The GPON technology was tested, validated, field-evaluated and made operational in BSNL's network in Ajmer (Rajasthan). The technology will help fulfil requirements of major national programmes like the National Optical Fibre Network and the State Wide Area Network.

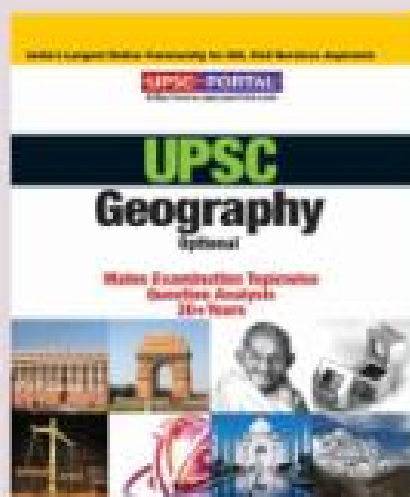
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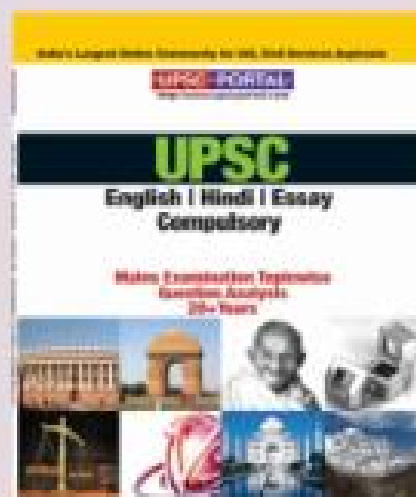
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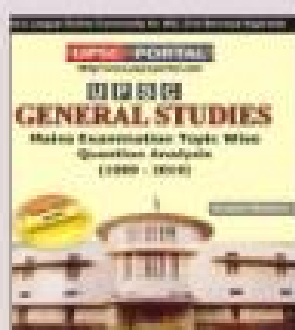
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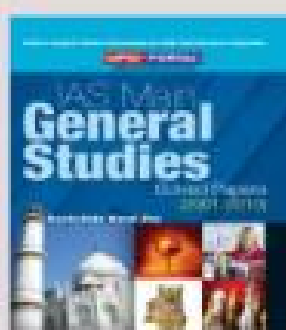
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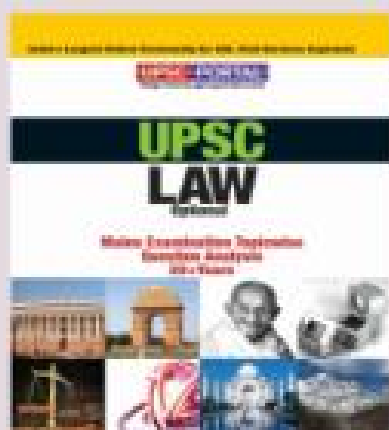
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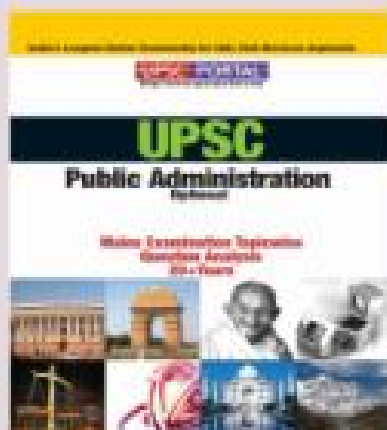
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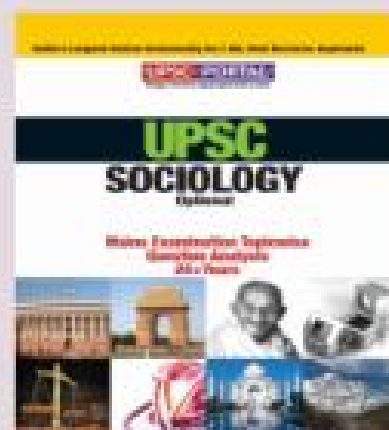
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India & The World

Indian – China

Indian diamond traders freed
Twelve of the 22 Indian diamond traders, detained in China for nearly 2 years on charges of smuggling, reached India on 5 January 2012 after they were let off following deportation orders by a Chinese court. Twenty-two traders, hailing mostly from Gujarat and Mumbai, were arrested in southern China's Shenzhen city in 2010 and were charged with smuggling diamonds worth 50 million yuan or 7.3 million US Dollars. They were accused of sourcing diamonds illegally from Hong Kong for sale in the Chinese market. The Shenzhen Intermediate People's Court which heard the traders' case on 7 December 2011, found 12 of them innocent and ordered their deportation. The rest of the traders have been awarded varied prison terms ranging from six years to three and half years.

India to Develop Facilities Near China Border

Considering the country's strategic and security requirements across the China-India border, the Centre has embarked on works to develop infrastructure, the government said here. Conscious of China developing infrastructure in the border regions opposite India in Tibet and Xinjiang Autonomous Regions there, the government was "giving careful and special attention" to the devel-

opment of infrastructure in the border areas opposite China, "to meet our strategic and security requirements and also to facilitate the economic development of these areas," Defence Minister A.K. Antony told the Rajya Sabha. Infrastructure development included the Qinghai-Tibet railway line, with proposed extension up to Xigze and Nyingchi besides roads and airport facilities. "The government keeps a constant watch on all developments having a bearing on India's security and takes all necessary measures to safeguard it," he said. The States, where the government is focussing on include Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Sikkim and Arunachal Pradesh. Among the measures was the development of the two airbases for the frontline air superiority fighters Su-30-MKI in the Northeast, one at Chabua and another at Tezpur.

Chinese-owned Ships Evade Inspection

Two merchant vessels of Chinese ownership left anchorage midway through an inspection by the International Transport Workers' Federation (ITF), fearing action for not having given minimum wages to their crew. The incident took place during the first day of the Flag of Convenience (FOC) Week of Action being observed by the ITF and its affiliated unions. M.V. Joyful Spirit, owned by the Golden Ocean Group

Ltd., and m.v. J. Shine, owned by the Jiangsu Ocean Shipping Company, were FOC ships that flew the flag of Hong Kong. They departed immediately after unloading the cargo. An FOC ship is one that flies the flag of a nation other than the country of ownership to avail cheaper labour, evade taxes and pay a low registration fee. The ITF, set up in 1896, has more than six million workers belonging to 600 transport workers' unions in over 137 countries.

Since the launch of the FOC Week of Action 10 years ago, 780 vessels have been inspected and 35 agreements signed with ITF standards. Back wages to the tune of \$1.02 million have been realised. A Croatian ship, which flew a Panama flag, was "arrested" by the ITF a year ago and was auctioned for Rs. 13 crore through a court order.

India - Pakistan

India Rejects Pakistan Proposal to Shift Heavy Guns

India has rejected Pakistan's proposal to move heavy artillery and mortars away from the Line of Control citing frequent ceasefire violations. It asked Islamabad to come clear on its nuclear policy, including command and control over nuclear assets. This was conveyed to the Pakistani officials by India during the two-day talks on nuclear and conventional confidence-building mea-

tures (CBMs) held in Islamabad after a gap of four years, sources said here on Friday. India conveyed to Pakistan the need to demonstrate restraint and responsibility in the nuclear field and urged it to facilitate talks on the Fissile Material Cut-off Treaty (FMCT). External Affairs Minister S.M. Krishna is slated to visit Pakistan to review the progress in talks and both sides are keen to have the meetings between Home Secretaries, Water Resources Secretaries, Defence Secretaries and Foreign Secretaries before the visit.

On the nuclear CBMs, India made it clear to Pakistan that views on nuclear doctrines could be exchanged only when official documents enunciating the policies were available in the public domain. Officials pointed out that India had announced its nuclear doctrine of credible minimum deterrence in 2003, which placed the command and control of nuclear devices with the civilian leadership. India stressed the need to have transparency and predictability in nuclear policies and the importance of demonstrating, in practical measure, restraint and responsibility in the nuclear field. Indian officials also asked their Pakistani counterparts to allow discussion on the Fissile Material Cut-off Treaty at the Conference on Disarmament. "This would be a CBM," sources said.

6th Round of Talks Between India & Pakistan

India and Pakistan concluded their Sixth Round of Expert Level Talks on Nuclear Confidence Building Measures in Islamabad on 27 December 2011. In this meeting, both the nations agreed to recommend to their

foreign secretaries to extend the validity of the agreement on reducing the risk from accidents relating to nuclear weapons. Pakistan suggested to India that heavy artillery should be removed from the Line of Control in Jammu and Kashmir. India and Pakistan also reviewed the implementation and strengthening of CBMs in the framework of Lahore MoU. The nations also agreed to explore possibilities for mutually acceptable additional CBMs. India and Pakistan discussed a proposal seeking a cooperative mechanism to deal with a crisis like Fukushima.

India-Russia

India-Russia Ties, An Anchor of Peace & Stability

Global politics will be high on the agenda of Prime Minister Manmohan Singh's visit to Russia in the context of shifting power equations in the world, said India's envoy to Russia. "The world is witnessing a profound transformation and a shift in the global balance of power," said Ambassador Ajai Malhotra. "Our relationship serves as an anchor of peace and stability during this transitions phase." The international agenda of talks acquires special relevance in the light of India taking the Chair of BRICS in 2012 and hosting the group's next summit in late March, Mr. Malhotra told the media ahead of the summit here on December 15-17. It will be the 12th bilateral summit since 2000 when the two countries agreed to hold top-level meetings annually. Noting that India and Russia have "identical, close or common" perspectives on a wide range of international issues, the Indian envoy urged the two countries to step up

cooperation on the global stage. "Global challenges make it imperative that we further intensify our dialogue on issues such as the need to revive the world economy, the situation in West Asia and North Africa, challenges in neighbouring Afghanistan, cooperation within BRICS, as well as new threats posed by climate change and piracy."

Indo-Russian Cooperation Can Push Global Changes in The Right Direction

"Together India and Russia can help shape global responses," he said. "The changes under way offer an opportunity to bring about an international order that is democratic, inclusive, based on the supremacy of international law and consistent with the objectives and principles contained in the U.N. Charter." During his talks with President Dmitry Medvedev and Prime Minister Vladimir Putin, the Indian Premier is expected to discuss bilateral cooperation in defence, space, atomic energy, hydrocarbons, and science and technology, he said. He pointed out that the ongoing protests that have held up the commissioning of the first of two Russian-built nuclear reactors at Kudankulam will not impact on collaboration with Russia in nuclear energy. "We will fulfill our commitments as regards Indo-Russian cooperation in atomic power energy." It is understood that a contract for the construction of two more reactors of the Russian design at Kudankulam has been finalised but may not be signed at the Moscow summit. "Both sides understand that we need to proceed with due care and caution" in regard of the Kudankulam protests, he said. The outgoing year has seen an encour-

aging growth in people-to-people contact, with the Indian embassy in Russia issuing 25 per cent more tourist, business and conference-linked visas compared with last year, said the Indian envoy. India has liberalised visa rules for Russian visitors since June, and Russia reciprocated the move on December 1.

5 Agreements Signed Between India & Russia

The Prime Minister of India visited Russia on 15-17 December 2011 to participate in the 12th Indo-Russian annual summit. India and Russia signed five major agreements during this summit, which includes licensed production of an additional 42 Sukhoi combat planes and to manage fly ash residue at thermal plants in Siberia. A MoU was signed on increasing cooperation and exchanges between anti-monopolies agencies and another MoU was signed to oversee the safety and quality issues by the drug standards and safety organisations to increase trade in the pharma sector. India and Russia also signed an educational exchange programme to share experiences in the field of pedagogy and to form a joint working group to monitor the agreement's implementation. During this visit, India and Russia also issued a joint declaration.

The main features of this joint declaration are as following:

- » India and Russia decided to commemorate the 65th anniversary of establishment of diplomatic relations between India and Russia in 2012 in both the countries in a fitting manner.
- » The sides commended the successful launch, by India, of the jointly

built YouthSat for space science studies; and expressed satisfaction on the progress in implementation of the joint lunar exploration project.

» The nations welcomed the outcome of the eleventh meeting of the India-Russia Inter Governmental Commission on Military-Technical Cooperation in addressing issues of mutual concern.

» As an important element of their Strategic Partnership, both sides reaffirmed their commitment to work together to strengthen the central coordinating role of the United Nations in international affairs as well as the crucial role of its Security Council in the maintenance of international peace and security.

» The sides expressed concern over negative trends in the global economy.

» The nations identified successful completion of the IMF reform under the terms and conditions agreed in the framework of the G-20 as a key element of the general reform of the international financial architecture.

» In the context of the situation in the Middle East and North Africa, the sides reaffirmed their commitment to the principles of: searching the way to overcome crises in the region in compliance with law, exclusively through peaceful means, avoiding violence and outside intervention, through broad, inclusive national dialogue on democratic reforms, taking into account the legitimate rights and aspirations of the peoples of the region.

» The sides agreed that the Shanghai Cooperation Organization (SCO) had become an important factor for regional security and cooperation.

» The sides attached importance to strengthening cooperation among

BRICS countries.

» India and the Russian Federation, as responsible states, possessing advanced nuclear technologies, share the objective of preventive proliferation of weapons of mass destruction and their means of delivery, including preventing their possible acquisition by terrorist groups.

» The sides recalled the bilateral Moscow Declaration between India and the Russian Federation on International Terrorism signed on November 6, 2001 in Moscow.

» Both sides reaffirmed the need for all states to combine efforts to vanquish terrorism.

» The sides emphasized the importance of joint bilateral and multilateral efforts in the fight against illicit drug trafficking which poses a growing threat to international peace and stability.

» India and the Russian Federation expressed concern over the situation emerging around Iran's nuclear programme. Both sides support a comprehensive and long-term settlement of the situation through exclusively political and diplomatic means by promoting dialogue.

India, Russia to Focus on Strategic Communications

India and Russia will focus on deliverables in defence and strategic communications besides taking forward talks on partnerships in nuclear energy and hydrocarbons spheres during Prime Minister Manmohan Singh's visit to Moscow. As is the tradition during summits in Moscow, Dr. Singh will also meet Prime Minister Vladimir Putin, architect of restoring India-Russia ties that were in disarray during the Yeltsin era. Briefing newsmen,

Foreign Secretary Ranjan Mathai painted a wide canvas of issues that would be taken up during the Prime Minister's two substantial interactions with Mr. Medvedev and Mr. Putin scheduled on Friday. This is the twelfth time the two countries will maintain the ritual of holding standalone annual summits every year besides meeting regularly on the sidelines of international meets. Having expressed disinterest in gas deposits in Yamal Peninsula on account of extreme weather conditions, given its energy woes, India is now keen on discussing modalities for teaming up with Novatech for exploration. Talks will also be held on other opportunities as Russia opens up its strategic deposits though there are stiff terms. The two sides will try sorting out the taxation problems facing Imperial Energy, bought in haste by ONGC and an important vehicle for taking forward India's quest for fossil fuels in Russia.

An important event taking place on a day Russia joins the World Trade Organisation, will be an important event taking place on that day will be an India-Russia CEOs meet with Tata Motors MD Ravi Kant and Sistema chief V.P. Evtushenkov in the chair. Dr. Singh and Mr. Medvedev will have a brief interaction with 20 CEOs and ask them to prepare the ground for a Comprehensive Economic Partnership Agreement. "Energetic efforts have been under way to not only maintain the momentum but also infuse greater content in our bilateral ties. In the last few months, bilateral visits and talks have taken place at the levels of Home, External Affairs, Defence, Commerce, Health, Tourism, Steel and Power

Ministers," said Mr. Mathai. On the next two units of Kudankulam, Mr. Mathai said discussions "are in advanced stages and there were prospects for taking them forward very soon".

India and Nepal

India and Nepal on 27 November 2011 signed a revised Double Taxation Avoidance Agreement (DTAA). This will help prevent tax evasion and facilitate exchange of information on banking between the two countries. DTAA, will allow Indian traders and investors to enjoy tax relaxation in India once they pay taxes in Nepal. The agreement is also likely to increase confidence of investors and help Nepal attract more investment from India. The revised DTAA between India and Nepal will replace an earlier agreement signed between India and Nepal in 1987.

Important Information:

» Indian firms are the biggest investors in Nepal. They account for about 47.5 per cent of total approved FDIs (Foreign Direct Investments).

» India is the biggest source of foreign investments in Nepal and its largest trading partner. However, Nepal accounts for only 0.44 per cent of India's total trade.

» The bilateral trade between India and Nepal increased from USD 1.98 billion US dollars in 2009-10 to around 2.70 billion US dollars in 2010-11, which is an increase of 37 per cent.

India - Japan

Allaying apprehensions regarding nuclear cooperation in the wake of the Fukushima accident, Japan on

Wednesday expressed keenness to expand ties in the sector after taking into consideration the safety aspects. Seeking to expand cooperation in the 60th year of establishing diplomatic ties, India and Japan decided to expedite work on infrastructure projects and agreed to enhance the currency swap arrangement from \$3 billion to \$ 15 billion. This was finalised during the talks between Prime Minister Manmohan Singh and his visiting Japanese counterpart Yoshihiko Noda. "We shall proceed with the negotiations on the [civil nuclear] agreement after giving due consideration to nuclear safety, nuclear disarmament and non-proliferation," Mr. Noda said at a joint press conference with Dr. Singh after the talks.

Combating Terrorism

The two leaders resolved to develop greater cooperation in combating terrorism through sharing information and utilising the India-Japan Joint Working Group on Counter-Terrorism, as well as multilateral fora such as the Financial Action Task Force and the Global Counter-Terrorism Forum. Reaffirming the importance of counter-terrorism cooperation at the UN, they recognised the urgent need to finalise and adopt the Comprehensive Convention on International Terrorism and called upon all states to cooperate in resolving the outstanding issues expeditiously.

Nuclear Tests

He said Japan attached importance to the voluntary commitments and actions India had expressed with regard to testing of nuclear devices. At the same time, Mr. Noda said it was Japan's duty to share the expe-

riences and the lessons learnt from the nuclear power accident at Fukushima and continue to contribute to nuclear safety around the world. Mr. Noda's comments assume significance as there have been questions on the fate of the proposed deal, which is under negotiation, after the radiation scare in Fukushima when tsunami hit a nuclear plant there on March 11.

Maritime Security

Dr. Singh and Mr. Noda agreed to expand cooperation in maritime security including safety and freedom of navigation and anti-piracy activities, by promoting bilateral and multilateral exercises, and through information sharing, as well as dialogues. They also welcomed the joint exercises between the Coast Guards of the two countries proposed to be held in January 2012, a joint statement issued after the talks said.

More Investment Sought

Noting that FDI from Japan accounted for just over one per cent of its total outward FDI flows, Dr. Singh said "we would like to see much more Japanese investment and technology transfer in India, which we will facilitate." Mr. Noda said cooperation regarding peaceful uses of nuclear energy was conducive to Japan's efforts to address climate change and to strengthen the global partnership with India.

Rail Technology

Dr. Singh welcomed the interest shown by Japan in sharing high speed rail technology for passenger networks in India.

India and Australia

India and Australia on 16 December 2011 signed an agreement to amend DTAA (Double Taxation Avoidance Agreement) with the objective of ensuring more effective exchange of financial information between the two countries. DTAA was signed between India and Australia in 1991. The revised tax agreement will facilitate the exchange of information on banking related information and taxation policies. The revised agreement also has a provision that India and Australia can assist each other in the collection of revenue claims.

The agreement states that nationals of one country will not be discriminated against the nationals of the other country, a feature absent in the earlier agreement. Moreover, there was no threshold limit for determining permanent establishment. In the revised agreement, the threshold limit has been rationalised to avail the exemption for service and exploration to boost cross border movement of capital and services.

Uranium Exports to India Approved

Australia's ruling Labour Party on 4 December 2011 in its annual policy conference approved plans to open up uranium sales to India. This cleared the way for talks on a bilateral nuclear agreement between India and Australia. The conference held in Sydney overturned its own ban, which prohibits Australia to sell uranium to nations such as India that have not signed Nuclear Non-Proliferation treaty. The policy change does not need to be approved by Parliament. Australia possesses ap-

proximately 40 percent of the world's known uranium reserves.

Science & Technology

Top 10 Breakthroughs of The year 2011

HPTN 052: The journal Science has lauded an eye-opening HIV study, known as HPTN 052, as the most important scientific breakthrough of 2011. This clinical trial demonstrated that people infected with HIV are 96 per cent less likely to transmit the virus to their partners if they take antiretroviral drugs (ARVs). Some researchers consider HPTN 052 a "game-changer" because of its near-100 percent efficacy in reducing HIV transmission rates. And, indeed, it has already sprung many clinicians and policy-makers into action. For all these reasons, Science spotlights the HPTN 052 study as the 2011 Breakthrough of the Year. Science's and its publisher, AAAS, the non-profit science society, have identified nine other groundbreaking scientific accomplishments during 2011.

The Hayabusa Mission: After some near-disastrous technical difficulties and a stunningly successful recovery, Japan's Hayabusa spacecraft returned to Earth with dust from the surface of a large, S-type asteroid. This asteroid dust represented the first direct sampling of a planetary body in 35 years, and analysis of the grains confirmed that the most common meteorites found on Earth, known as ordinary chondrules, are born from these much larger, S-type

asteroids.

Unraveling Human Origins: Studying the genetic code of both ancient and modern human beings, researchers discovered that many humans still carry DNA variants inherited from archaic humans, such as the mysterious Denisovans in Asia and still-unidentified ancestors in Africa. One study this year revealed how archaic humans likely shaped our modern immune systems, and an analysis of Australopithecus sediba fossils in South Africa showed that the ancient hominin possessed both primitive and Homo-like traits.

Capturing a Photosynthetic rotein: In vivid detail, researchers in Japan have mapped the structure of the Photosystem II, or PSII, protein that plants use to split water into hydrogen and oxygen atoms. The crystal-clear image shows off the protein's catalytic core and reveals the specific orientation of atoms within. Now, scientists have access to this catalytic structure that is essential for life on Earth — one that may also hold the key to a powerful source of clean energy.

Pristine Gas in Space: Astronomers using the Keck telescope in Hawaii to probe the faraway universe wound up discovering two clouds of hydrogen gas that seem to have maintained their original chemistry for two billion years after the big bang. Other researchers identified a star that is almost completely devoid of metals, just as the universe's earliest stars must have been, but

that formed much later. The discoveries show that pockets of matter persisted unscathed amid eons of cosmic violence.

Getting to Know the Microbiome: Research into the countless microbes that dwell in the human gut demonstrated that everyone has a dominant bacterium leading the gang in their digestive tract: Bacteroides, Prevotella or Ruminococcus. Follow-up studies revealed that one of these bacteria thrives on a high-protein diet while another prefers vegetarian fare. These findings and more helped to clarify the interplay between diet and microbes in nutrition and disease.

A Promising Malaria Vaccine: Early results of the clinical trial of a malaria vaccine, known as RTS,S, provided a shot in the arm to malaria vaccine research. The ongoing trial, which has enrolled more than 15,000 children from seven African countries, reassured malaria researchers, who are used to bitter disappointment, that discovering a malaria vaccine remains possible.

Strange Solar Systems: This year, astronomers got their first good views of several distant planetary systems and discovered that things are pretty weird out there. First, NASA's Kepler observatory helped identify a star system with planets orbiting in ways that today's models cannot explain. Then, researchers discovered a gas giant caught in a rare "retrograde" orbit, a planet

circling a binary star system and 10 planets that seem to be freely floating in space — all unlike anything found in our own solar system.

Designer Zeolites: Zeolites are porous minerals that are used as catalysts and molecular sieves to convert oil into gasoline, purify water, filter air and produce laundry detergents (to name a few uses). This year, chemists really showed off their creativity by designing a range of new zeolites that are cheaper, thinner and better equipped to process larger organic molecules.

Clearing Senescent Cells: Experiments have revealed that clearing senescent cells (those that have stopped dividing) from the bodies of mice can delay the onset of age-related symptoms. Mice whose bodies were cleared of these loitering cells didn't live longer than their untreated cage-mates — but they did seem to live better, which provided researchers with some hope that banishing senescent cells might also prolong our golden years.

A new Candidate Malaria Vaccine

A new candidate malaria vaccine with the potential to neutralise all strains of the most deadly species of malaria parasite has been developed by a team led by scientists at the University of Oxford. The results of this new vaccine independently confirm the utility of a key discovery reported last month from scientists at the Wellcome Trust Sanger Institute who had identified this target within the parasite as a potential 'Achilles' heel' that could hold significant promise for vaccine development. The most deadly form of mosquito, *Plasmodium falciparum*,

is responsible for nine out of ten deaths from malaria. Vaccinating against malaria is likely to be the most cost-effective way of protecting populations against disease; however, no licensed vaccine is currently available.

Dr Sandy Douglas, a Wellcome Trust Clinical Research Training Fellow from the University of Oxford and first author on the new study, adds: "We have created a vaccine that confirms the recent discovery relating to the biology of RH5 antigen, given it can generate an immune response in animal models capable of neutralising many — and potentially all — strains of the *P. falciparum* parasite, the deadliest species of malaria parasite." Our next step will be to begin safety tests of this vaccine. If these prove successful, clinical trials in patients may begin within the next two to three years.

Fighting Iron Deficiency

Someone with an iron deficiency should substantially reduce consumption of coffee and black tea. This is according to Petra Renner-Weber, a member of Germany's Home Economics and Nutrition Science Association. She says that tannin in the drinks inhibits the absorption of iron. "About two hours should pass after a meal before drinking coffee or tea," she added. Renner-Weber said the body absorbed iron from animal products such as meat and sausage best. When its iron stores are depleted, the body absorbs a lot of iron from food. When stores are well supplied, it takes in little of the mineral.

She advises vegetarians to eat iron-rich vegetables such as beets as

well as legumes and whole grains. She said that vitamin C and organic acids enhanced the absorption of iron from plant foods and so she recommends drinking a glass of orange juice at meals or having fruit salad for dessert. Iron deficiency, which a doctor can detect with a blood test, is caused by an unbalanced diet or, in women, heavy menstrual periods, Renner-Weber said. Symptoms included tiredness, weakness, increased susceptibility to infections, problems with hair and nail growth, and dry, chapped skin. Men require about 10 mg of iron daily, and women 15.

Supernova of a Generation

It was the brightest and closest stellar explosion seen from Earth in 25 years, dazzling professional and backyard astronomers alike. Now, thanks to this rare discovery—which some have called the "supernova of a generation" — astronomers have the most detailed picture yet of how this kind of explosion happens. Known as a Type I a supernova, this type of blast is an essential tool that allows scientists to measure the expansion of the universe and understand the very nature of the cosmos. On August 24, the Palomar Transient Factory (PTF) team discovered the supernova in one of the arms of the Pinwheel Galaxy (also called M101), 21 million light years away. They caught the supernova just 11 hours after it exploded.

27 Club' Hypothesis is Incorrect

The list of well known musicians who have died at age 27 may look

like more than a coincidence — Amy Winehouse, Jim Morrison, Jimi Hendrix, Janis Joplin, Kurt Cobain, and Brian Jones to name a few — but their age is unlikely to have been the cause of their demise, according to research published in the British Medical Journal. While fame may increase the risk of death for musicians, probably due to their rock and roll lifestyle, this risk is not limited to age 27, say the authors led by Adrian Barnett from Queensland University of Technology in Australia. To test the “27 club” hypothesis, the authors compared the mortality of famous musicians with that of the UK population. They included 1,046 musicians (solo artists and band members) who had a number one album in the UK charts between 1956 and 2007.

During this period (1956-2007) it was found that 71 (7 per cent) of the musicians died. The authors used mathematical analysis to determine the significance of age 27. They found no peak in the risk of death at this age, however musicians in their 20s and 30s were two to three times more likely to die prematurely than the general UK population. The research team found some evidence of a cluster of deaths in those aged 20 to 40 in the 1970s and early 1980s. But there were no deaths in this age group in the late 80s. The authors conclude that the “27 club” is based on myth, but warn that musicians have a generally increased risk of dying throughout their 20s and 30s.

Protecting an anti-malarial drug from developing resistance: It is a drug that has its roots in ancient Chinese medicine. In the fight against malaria, a disease that over

200 million people are estimated to have caught in 2010, some 655,000 of whom died of it, protecting the effectiveness of artemisinin-based drugs has become vitally important. A number of Indian pharmaceutical companies have been among those manufacturing and marketing drugs that are likely to foster resistance to artemisinin in the malaria parasite, according to the latest World Malaria Report that was recently released. Artemisin and its derivatives have saved countless lives after the single-celled parasite, *Plasmodium falciparum*, that causes the most dangerous forms of the disease became resistant to the drug chloroquine. However, strains that are resistant to even artemisinin have emerged in parts of South-East Asia and could potentially spread, as has happened with earlier antimalarial drugs.

To prevent that from happening, the global health agency recommends that artemisinin be given in combination with another drug. Such artemisinin-based combination therapy (ACT) should, it says, be first-line treatment for uncomplicated malaria caused by *P. falciparum*. The two-drug combination reduced the chances of the parasite developing resistance. Moreover, a three-day course of a recommended ACT generally cleared the parasites from the body. The use of ACT has grown rapidly. Globally, the number of ACT courses procured by the public sector jumped nearly seven-fold between 2005 and 2006, and then more than doubled, reaching 181 million, in 2010, according to the World Malaria Report. The demand for these drugs was expected to reach 287 million treat-

ments this year and touch 295 million courses in 2012. Ten of the 28 manufacturers of monotherapies were in India, according to a spokesperson for the WHO Global Malaria Programme. “Oral artemisinin monotherapy is banned in India,” according to the ‘Guidelines for Diagnosis and Treatment of Malaria in India’ published in 2010 by the National Institute of Malaria Research in Delhi and the Union Health Ministry's National Vector Borne Disease Control Programme.

Nuclear Disaster Response Failed During Tsunami

Japan's response to the nuclear crisis that followed the March 11 tsunami was confused and riddled with problems, including an erroneous assumption an emergency cooling system was working and a delay in disclosing dangerous radiation leaks, an interim report revealed on December 26. The disturbing picture of harried and bumbling workers and government officials scrambling to respond to the problems at Fukushima Dai-ichi nuclear power plant was depicted in the report detailing a government investigation. The 507-page interim report, compiled by interviewing more than 400 people, including utility workers and government officials, found authorities had grossly underestimated tsunami risks, assuming the highest wave would be 6 meters (20 feet). The tsunami hit at more than double those levels. The report criticized the use of the term “soteigai,” meaning “outside our imagination,” which it said implied authorities were shirking responsibility for what had happened. It said by labeling the events

as beyond what could have been expected, officials had invited public distrust.

The report, set to be finished by mid-2012, found workers at Tokyo Electric Power Co., the utility that ran Fukushima Dai-ichi, were untrained to handle emergencies like the power shutdown that struck when the tsunami destroyed backup generators setting off the world's worst nuclear disaster since Chernobyl. A better response might have reduced the core damage, radiation leaks and the hydrogen explosions that followed at two reactors and sent plumes of radiation into the air, according to the report. The government also delayed disclosure of radiation data in the area, unnecessarily exposing entire towns to radiation when they could have evacuated, the report found. The government recommended changes so utilities will respond properly to serious accidents. It recommended separating the nuclear regulators from the unit that promotes atomic energy, echoing frequent criticism since the disaster. Japan's nuclear regulators were in the same ministry that promotes the industry, but they are being moved to the environment ministry next year to ensure more independence.

Microalgae

To its votaries, tiny organisms known as microalgae could hold answers to some intractable problems. That includes curbing carbon dioxide emissions that are contributing to global warming and reducing the burden of industrial effluents. "We can change trash into gold" and safeguard human existence on the

planet, exclaimed Ji-Won Yang of the Department of Chemical and Biomolecular Engineering at the Korea Advanced Institute of Science and Technology in South Korea. Microalgae, like plants, are capable of photosynthesis, using the energy from sunlight to turn carbon dioxide and water into sugar. Prof. Yang spoke of his team's efforts at treating municipal wastewater using the single-celled green alga, *Chlorella vulgaris*. Such wastewater contained plenty of organic compounds and nutrients to sustain the organism. The oils that then accumulated in the cells could be harvested and turned into biodiesel. It was found that untreated wastewater gave the best algal growth. Nitrogen-fixing bacteria found in the wastewater could be acting as growth enhancers, he noted.

A pilot plant based on the alga had been established at a plant of the China Steel Corporation. To meet pollution control norms, the effluent was earlier being neutralised with sodium hydroxide. The large quantities of sludge that resulted had then to be disposed in a secured landfill. It had been possible to engineer a treatment process to efficiently carry out the neutralisation by providing suitable conditions for a blue green alga, *Chroococcus turgidus*, to grow in the effluent. As the alga grew, it reduced the acidity of the effluent. This algal strain had been isolated from the effluent itself. The remediation plant had been working well for over five years, producing negligible quantities of sludge and saving money that had earlier been spent on sodium hydroxide.

Ordinary Tissue Transformed into Heart Muscle Cells

Scientists discovered a way to transform ordinary tissue into beating heart muscle cells. It could pave the way for new therapeutic approaches for making a damaged heart to repair itself. Scientists used a zebrafish system to develop a small and robust molecule, which can transform stem cells into beating heart muscle cells. The scientists in their experiment found that cardionogen treatment enlarged the zebrafish heart by stimulating production of new cardiac muscle cells from stem cells. The scientists discovered three structurally related molecules (Cardionogen-1, 2 and 3) after screening 4000 compounds. It could promote or inhibit heart formation depending on when they were administered during development.

New theory Explains How Fishes Grew into Amphibians

A small fish crawling out of a drying desert pond underlines a theory that ties up the fishes with the amphibians, reveals a study. "Such a plucky hypothetical ancestor of ours probably could not have survived the overwhelming odds of perishing in a trek to another shrinking pond," said Gregory J Retallack, professor of geological sciences at University of Oregon, who led the study. This scenario comes from the late Devonian period, roughly 390 million to 360 million years ago, which late Harvard palaeontologist Alfred Romer propounded, the Journal of Geology reported. Challenging

Romer's theory on fish survival, Retallack said that the transitional fossils were not associated with drying ponds or deserts, but were found consistently with humid woodland soils, according to a university statement.

Papaya Mealy Bug

In India mealybug infests a whole range of crops and numerous weeds. Infested growing points become stunted and swollen which may vary depending upon the susceptibility of each host. Heavy clustering of mealybugs can be seen under leaf surface giving the appearance of a thick mat with waxy secretion. Severe infestations resemble patches of cotton all over the plant. They excrete copious amount of honey dew that attracts ants that leads to the development of black sooty mould, which inhibits the plants' ability to manufacture food. Both nymphs and adults suck the sap from leaves causing withering and yellowing of leaves. Fruit may drop prematurely on crop plants. Heavy infestation can cause defoliation and even death of the plant. When fruits are infested, they may be entirely covered with the white, waxy coating of the mealy bug. Infestation can lead to fruit drop, or fruit may remain on the host in dried and shrivelled condition.

Biological control by release of natural enemies has proved to be very successful. The National bureau of agriculturally important insects (NBAIL) has successfully imported three parasitoids to suppress the mealybugs effectively. The larvae of *Spalgus apius* commonly called as blue butterflies feed on all stage

of the mealybug. As the young larvae are similar in appearance to mealybugs, it is difficult to recognize them amidst the host population. Adult is a small butterfly with upper side of the wings dark brown in colour and ash coloured lower sides with dark striations. Krishi Vigyan Kendra at Karur has mass multiplied the parasitoids successfully in the laboratory as well as field conditions.

Solar-Powered Sprayer That Solves Many Problems

One need not be a genius to develop any commonly used devices. Take the case of the humble yet important knapsack manual sprayer (hung on the shoulders). Though many models are available on the shelves, priced at different rates, most of them last for only a few years. "Regularly filling them with water, pesticides and fuel (in case of fuel operated ones) makes it difficult to lift and hang them on the shoulder. After an hour of spraying, the weight of the machine creates a backache and shoulder pain for farmers," says Mr. David Raja Beleau, Assistant Director of Horticulture Kadayam, Tamil Nadu, who developed a solar powered battery operated sprayer for farmers.

High-Speed Bullet Train in China

China on 23 December 2011 launched a high-speed bullet train in Qingdao, Shandong province. Its speed can reach up to 500 kilometre per hour. The train was launched by China's largest rail vehicle maker,

CSR Corp. Ltd. The six-car train has a maximum tractive power of 22800 kilowatts, compared with 9600 kilowatts for the CRH380 trains. The train is made from plastic materials reinforced with carbon fibre. It is designed to resemble an ancient Chinese sword. CRH 380 trains are currently in service on the Beijing-Shanghai High-speed Railway. It holds the world speed record of 300 kilometres per hour. China has the largest network of bullet-train track in the world, with 8000 miles of track.

Memory Gene Npas4

A team of neuroscientists found a gene that turns on when memories are stored in the brain. This discovery could help trace the exact locations of memories in the brain. It could help in creating and altering memory. The gene is called Npas4, which is very active in the hippocampus. The animal is known to have a brain structure critical in forming long-term memories. During mice studies Scientists found that by taking out Npas4 from test subjects, neuroscientists were able to prevent new memories from forming.

Tube Light Flicker

Both conventional fluorescent lamp and compact fluorescent lamp (CFL) produce white light by the process of fluorescence underlying the conversion of invisible ultra-violet (UV) generated from the electrical discharge (passage of electricity) along the column of the tube to visible light occurring on the white coating made of powdery luminescent material coating inside the walls of the tube. The process of generating white

light from these lamps is the same although chemical composition of the luminescent materials (phosphors) used in these lamps are different which eventually determine the light output produced. There is slight difference in the process of initiating the electrical discharge between CFL and conventional fluorescent lamp.

In a conventional fluorescent lamp, the electrical discharge along the lengthy column of the tube (usually 4 feet long) is struck through a high voltage with the help of a choke (voltage converter) and bi-metallic strip starter combination. Upon switching on, the lamp circuit is closed due to the deflection of bi-metallic strips establishing contact. Also the electrical discharge is initially built along the medium argon/neon-mercury mixture followed by regular discharge through mercury vapours to yield stabilized generation of UV light. These two processes take some time to stabilize. On the other hand in the case of CFL having built-in integrated electronic ballast comprising array of AC-DC-AC converters and oscillators, with the instant generation of high frequency (50 kHz) in the CFL column, the electric discharge is struck instantly without any delay and starts fluorescing facilitating a quick start as high frequency helps to strike electrical discharge faster.

Higgs Boson

The results announced from CERN on December 13 by the two teams — ATLAS and CMC — do not provide definite and conclusive evidence of the presence of the elusive Higgs boson, but they have collected suf-

ficient data that is consistent with the possible appearance of the God particle. According to theorists some subatomic particles gain mass by interacting with the Higgs boson. The Higgs boson is the only undiscovered part of the Standard Model of physics, which describes the basic building blocks of matter and their interactions.

The combined results presented last month by the two teams provided no room for the Higgs boson to hide in. The results had narrowed down the mass region where the Higgs particle is most likely to be — between 114 GeV and 141 GeV (gigaelectron volt). The latest results have further narrowed the mass range — 115-130 GeV range in the case of ATLAS, and 117-127 GeV by CMC. "We have not collected enough evidence for a discovery. There is an excess of events compatible with the hypothesis that it could be a Higgs," Guido Tonelli, spokesman for CMC was quoted as saying in Nature. But more confirmatory data is required before its presence can be proved. According to the journal, if supported by further data, the results suggest a Higgs particle with a mass of about 125 GeV. This is because the ATLAS results are "consistent with a 125-126 GeV Higgs at a statistical level of at most 3.6 standard deviation, while the CMC team found 124 GeV signal of at most 2.6 standard deviation," Nature states.

Oyster 'language'

Scientists in Japan have begun studying the 'language' of oysters in an effort to find out what they are saying about their environment. Researchers are monitoring the open-

ing and closing of the molluscs in response to changes in seawater, such as reduced oxygen or red tide, a suffocating algal bloom, that can lead to mass die-offs. Using a device they have nicknamed the 'kai-lingual,' scientists from Kagawa University want to see if they can decode oyster movements that might warn of possible problems. The kai-lingual uses a series of sensors and magnets to send information on the opening and closing of shells in response to environmental changes. The technique has never before been used on oysters farmed for food, but has been employed by pearl oyster farmers.

Kepler-20e and Kepler-20f

NASA's Kepler mission on 20 December 2011 discovered the first Earth-size planets orbiting a sun-like star outside our solar system. The planets, called Kepler-20e and Kepler-20f, are too close to their star to be in the so-called habitable zone where liquid water could exist on a planet's surface, but they are the smallest exoplanets ever confirmed around a star like our sun. The discovery marks the next important milestone in the ultimate search for planets like Earth. The new planets are thought to be rocky. Kepler-20e is slightly smaller than Venus, measuring 0.87 times the radius of Earth. Kepler-20f is a bit larger than Earth, measuring 1.03 times its radius. Both planets reside in a five-planet system called Kepler-20, approximately 1000 light-years away in the constellation Lyra.

To validate Kepler-20e and Kepler-20f, astronomers used a computer program called Blender, which runs

simulations to help rule out other astrophysical phenomena masquerading as a planet. Kepler-20e orbits its parent star every 6.1 days and Kepler-20f every 19.6 days. These short orbital periods mean very hot, inhospitable worlds. Kepler-20f, at 800 degrees Fahrenheit, is similar to an average day on the planet Mercury. The surface temperature of Kepler-20e, at more than 1400 degrees Fahrenheit, would melt glass. The Kepler-20 system includes three other planets that are larger than Earth but smaller than Neptune. Kepler-20b, the closest planet, Kepler-20c, the third planet, and Kepler-20d, the fifth planet, orbit their star every 3.7, 10.9 and 77.6 days. All five planets have orbits lying roughly within Mercury's orbit in our solar system. The host star belongs to the same G-type class as our sun, although it is slightly smaller and cooler.

Measuring Radiation on Journey to Mars

The Radiation Assessment Detector, the first instrument on NASA's next rover mission to Mars to begin science operations, was powered up and began collecting data December 6, almost two weeks ahead of schedule. RAD is the only instrument scheduled to collect science data on the journey to Mars. The instrument is measuring the energetic particles inside the spacecraft to characterize the radiation environment an astronaut would experience on a future human mission to the Red Planet. "We are seeing a strong flux in space, even inside the spacecraft, about four times higher doses of radiation than the baseline we measured on the launch pad from the

RTG, or radioisotope thermoelectric generator, used to power the rover. It's very exciting to begin the science mission." RAD will measure the relevant energetic particle species originating from galactic cosmic rays, the Sun and other sources. Of particular interest are the particles accelerated by coronal mass ejections on the surface of the Sun, which spew fast-moving clouds of radiation across the solar system. RAD was designed to characterize radiation levels on the surface of Mars, but an important secondary objective is measuring the radiation on the almost nine-month journey through interplanetary space, to prepare for future human exploration.

NASA Developed Space Harpoon

NASA (National Aeronautics and Space Administration) built a prototype capable of launching test harpoon tips across a distance of a mile (1.6km). It would be safer to collect comet material using the space harpoon before landing on the celestial bodies. The samples thus collected will help reveal the origins of the planets and how life was created on Earth. NASA's Stardust mission had recovered particle samples in 2002.

These samples included an amino acid, glycine, which is used by living organisms to create proteins. It endorsed the fact that some of life's ingredients had formed in space and were delivered to Earth by meteorite and comet impacts. A comet is an icy small Solar System body that, when close enough to the Sun, displays a visible coma and sometimes a tail.

India Successfully Test-Fired N-capable Agni-I Missile

India successfully test-fired its nuclear capable Agni-I strategic ballistic missile on 1 December 2011 from the test range at Wheeler Island off Odisha coast, as part of the Indian Army's user trial. It was test-fired from a mobile launcher, from launch pad-4 of the Integrated Test Range (ITR). The Strategic Force Command (SFC) of the Army, as part of their training exercise, executed the trial with logistic support provided by Defence Research Development Organisation (DRDO) at the ITR. The trajectory of the missile, which had an operational strike range of 700 km, was tracked by sophisticated radars and electro-optic telemetry stations located along the sea coast and ships positioned near the impact point in the downrange area.

Agni-I missile is equipped with a specialised navigation system which ensures it reaches the target with a high degree of accuracy. Agni-I was developed by Advanced Systems Laboratory (ASL), the premier missile development laboratory of the DRDO in collaboration with Defence Research Development Laboratory (DRDL) and Research Centre Imarat (RCI) and integrated by Bharat Dynamics Limited (BDL), Hyderabad. The last trial of the Agni-I missile was successfully carried out on 25 November 2010 from the same base.

Details of Agni-I:

» Agni-I strategic ballistic missile is an indigenously developed surface-to-surface missile

- » It is a single-stage missile
- » It is powered by solid propellants
- » Agni-I can carry payloads up to 1000 kg
- » It Weighed 12 tonnes
- » It was 15-metre-long

Why Mobile Phones Switched When Travel in a Flight?

Airplanes, soon after takeoff and much before landing, fly at an altitude of higher than a kilometre during their flight. They have to ascend to these high altitudes for the aerial flight to avoid turbulence due to clouds and the clear air turbulence (CAT) present at low and normal altitudes. At such high altitudes, the pilots have to largely depend on the avionics and computer-assisted coded signal communications. The pilots know the flight location and destination besides other geographical details by guided commands from the Global Positioning System (GPS) which links the control tower, airplane cockpit and geostationary satellites. Further, they can know the weather and other meteorological conditions and directions of landing and takeoff at the airports, only through wireless communications from the control towers at the airports. In poor weather, the pilots use instrument landing system (ILS) to find the runway. Most of these avionics are remote operations and all the communications are in wireless radio and microwave semionics. All the wireless signal trafficking is accomplished by modulated radio and microwave transmissions which type the cell phones also owe their functioning to. If there are any mobile phones on board in

the cabin of the flight in 'on' mode during takeoff, flight and landing, the microwave transmission between the mobile phone towers and the mobile phones might interfere with the communications the flights are busily engaged in (between the cockpit and the control towers).

YETI Demystifies Mathematical Modeling

Young Ecologists Talk and Interact (YETI) 2011, at the Indian Institute of Technology-Guwahati, witnessed a unique activity on the second day. Instead of interaction on ecology or conservation, participants in one of the workshops were asked to do an arithmetic exercise using calculators. They were amazed at the results they got as they had no idea that these could be related to studies in ecological sciences. It was Vishwesh Guttal, assistant professor at the Centre for Ecological Sciences (CES), Indian Institute of Sciences (IISc), Bangalore, who demystified mathematical modelling of ecology for the young ecologists. Mr. Guttal helped them understand that through proper application of simple mathematical modelling, interesting results of ecological studies could be found.

Innovative Technique Showcased at National Conference

"A single person combines in himself the work of a weatherman, an engineer, a marketing executive, a veterinarian, and above all a statesman endowed with the responsibility of feeding his people, says Mr G. R. Sakthivel an enterprising and in-

novative farmer from Sathyamangalam, Erode, Tamil Nadu. A member of the scientific advisory committee of MYRADA-KVK and Erode district organic farmers' federation, Mr. Sakthivel developed a simple yet effective mechanism to filter cattle waste and use the same in sugarcane cultivation. The four compartment system includes the filtration technique, ensuring that an enriched solution gets collected at the end, mixed with water, and sent by drip irrigation system to the field. The first section is meant for collection of cow dung and urine mixing. After thorough mixing, the solution is sent to the second compartment for first filtration. The solid matter is used for biogas production and the upper part of the solution is then allowed to flow into a third compartment where jaggery is added for fermentation. The clear enriched filtrated medium is collected and used for irrigation. By adopting this technology the farmer can save Rs.27,000 per acre as it reduces labour and fertilizer cost, according to Mr. Sakthivel. This technology aids water holding capacity in the soil and presence of earth worms is considerably increased in the fields.

Land Mine Technology to Help Detect Breast Cancer

Scientists claimed that now a simple test could diagnose breast cancer in women in eight seconds. They claim to have developed it from a technology that is used to detect land mines. The new screening tool, called MARIA, is safer and more comfortable than traditional mammogram X-rays. It can be used on

women of any age, unlike current technology. Scientists already carried out three successful trials with 300 women at Frenchay and Southmead hospitals. They also claimed that results from the trials showed a diagnostic success rate of 80 per cent. MARIA stands for Multistatic Array processing for Radio wave Image Acquisition, is made from 60 antennas, which create a complete scan of the breast in eight seconds.

Genetic Tests to Detect Breast Cancer

Scientists recently developed a genetic test to detect breast cancer. It will help those women who are in the early stages of breast cancer. It will save them the trouble of undergoing chemotherapy. Scientists invented the Oncotype DX test, which can help doctors determine the likelihood of breast cancer returning and if further intervention is needed. The test uses a small sample of breast tumour tissue and focuses on groups of genes, which can influence how a cancer is likely to grow and respond to treatment. At present, the test is available in the US and American Society for Clinical Oncology and the National Comprehensive Cancer Network include it in their treatment guidelines for the early stage of breast cancer.

Why is it Hard to Pull an Empty Mug Completely Immersed Upside Down in Water?

Not only is it hard to pull out any empty mug completely immersed upside down in water but also it is

harder to push an empty mug upside down into water. The latter difficulty is mainly due to the buoyancy, the air sac, captured inside the mug, experiences during such operation. However, when we try to pull out the same empty mug or the mug already drowned, in an upside manner, we experience certain difficulty of pulling it out. This difficulty stems from a different cause and owes to the surface tension phenomenon of liquids. The atoms or molecules of a liquid in its bulk regions have their chemical valences fully satisfied in all the six directions (front and rear, left and right and up and down or mathematically, x and x' , y and y' and z and z' directions of space) whereas those present on the surface of the liquid have only five of their directions (front and rear, left and right and down) chemically satisfied while leaving the upward connectivity missing (say, z direction). This deficiency has the effect of keeping all the atoms or molecules of the liquids, on their surface, more firmly coherent on their lateral sides enabling the surface of such liquid act like an elastic skin. Hence, it would demand certain amount of force to tear of the surface of the liquids.

The amount of force required to open apart one unit length of the liquid's surface is defined as the surface tension of the liquid. Its value is unique to the liquid and is highly sensitive to the temperature, pressure and purity of the liquid. For water, its value is about 72 dynes per cm (or 72 milli newtons per meter). When a mug is pulled out upside down, its brim has to tear open the surface of water layer by a length (perimeter) equal to the

mug's brim to detach itself from the surface of the water. Say, the mug has a perimeter (brim) of about 12 inches (i.e., about 30 cms) and a mass of about half kilogram with negligible thickness. Then, it is held on its brim by the water surface by a surface force of about 0.02 newtons when the mug is about to detach from the surface. This means, we have to apply this much additional force (besides the force required against gravity) when the mug's brim is pulling out from the liquid's surface besides the usual force of about 5 newtons against the gravity. The 5 newtons against the gravity would have been the only force required had there been no surface tension phenomenon. Hence, we feel it hard to pull out an empty mug, upside down, from water.

Technology to Produce Pocket TV

British scientists recently developed a technology, which could be used to produce pocket TV. Scientists developed a new form of light-emitting crystals, known as quantum dots. These dots can be used to produce ultra-thin televisions. The tiny crystals are 100000 times smaller than the width of human hair. This can be printed onto flexible plastic sheets (which can be rolled up) to produce a paper-thin display.

Blue Brain Project

Science has advanced in the Second Millennium in ways that we now challenge ourselves into doing what we could not have earlier. We have embarked on an experiment to determine the ultimate particle of

which all nuclei, atoms, molecules and materials are made anywhere on earth or in the vast sky. We look for the “God particle”. We have sent man-made crafts to other planets, and have made machines and tools that enquire whether life exists elsewhere in the sky, and whether there are other planets similar to ours that may support life- “second earths”. We have read the “book of human life”, the 3.2 billion- letter-long code of DNA that makes us what we are. There are two ways to approach this grand challenge. One is to try and understand the neurons (nerve cells) of “lower” organisms – worms, flies, fish, rats and such, and build on this knowledge. This involves experiments on the “normal” organism and on its “mutants” – its cousins who are born (or tampered with in the lab) with one or more neural problem. Many biologists are involved in such experiments, and several more directly study humans with neurological problems and try to make sense out of the basis behind such errors in the brain.

By the mid-1970s, information technology had advanced to such a level that companies, notably IBM, had thought of modelling the “thought” behind chess games that we humans play. The advanced computers programming that they did at that time was christened “Deep Thought” (a term coined by researchers at Carnegie Mellon University, including Dr. Thomas Anantharaman). It is these advances in computers that led Dr. Henry Markram of Ecole Polytechnique Federal de Lausanne, Switzerland, to think of creating supercomputer models of the brain that would be accurate to the last biological details. To this end, he

has put together what he calls the Blue Brain Project (the blue here symbolizing supercomputers).

The approach of Blue Brain is binary. It uses the information available from the hundreds of thousands of publications of neuroscientists on one hand, and ability of computer programmers to create connectivities between the millions of “neurons” in silico on the other. Combining the two, he expects to build a facility that would aim at data integration and help build brain models. Gesture-based communications are quite common in other primates such as orangutans and chimpanzees, which cannot speak but use a variety of hand, feet and limb gestures to communicate among themselves and also with their human care-takers. Dr. Amy Follick of Emory University, Atlanta has been able to distinguish 31 manual gestures and 18 facial/vocal gestures.

Bone Marrow Cancer Genes Identified

Scientists identified genes that can increase a person’s risk of developing multiple myeloma by 30 percent. Multiple myeloma is an aggressive form of bone marrow. A team at the Institute of Cancer Research used a technique known as genome wide association study to scan the DNA of 1675 patients with multiple myeloma. When results were compared, scientists found that two regions of the DNA that were more common in people with multiple myeloma and were therefore linked to a higher chance of developing the disease. Multiple myeloma is also known as plasma cell myeloma or Kahler’s disease. It is a cancer of plasma cells, a type of white blood

cell responsible for the production of antibodies.

More Potent Ways to Design HIV Drugs found

In perhaps the most comprehensive survey of the inner workings of HIV, an international team of scientists led by researchers at the University of California, San Francisco has mapped every apparent physical interaction the virus makes with components of the human cells it infects. This work may reveal new ways to design future HIV/AIDS drugs. In back-to-back papers published in the journal Nature, the survey reveals a pathogenic landscape in which HIV’s handful of proteins makes hundreds of physical connections with human proteins and other components inside the cell. In one paper, the team details 497 such connections, only a handful of which had been previously recognized by scientists.

Disrupting these connections may interfere with HIV’s lifecycle, and the existence of so many new connections suggests there may be several novel ways to target the virus. In a companion paper, Krogan and collaborating labs investigated one such connection in detail. They discovered that an HIV protein called Vif makes a physical connection with a human protein called CBF- β , hijacking its function. The UCSF-led study has provided the most comprehensive and detailed picture to date of all the interactions HIV has with the human cells it infects, and identifying these interactions may lead to the development of new drugs to treat the disease. Interfering with this association may be a

way to block the virus. Ultimately, if scientists can design compounds to do this safely and effectively, those compounds could form the basis for a new type of HIV/AIDS treatment.

Mechanism Controlling the Fat in Human Body

Scientists made a key discovery about the mechanism controlling the fat in human body. It sheds new light on how proteins regulate appetite control and insulin secretion. This is the first time such a mechanism was described and it's unique, showing the importance of this protein to cellular function.

CPT1 is the protein responsible for regulating fatty acid oxidation in the liver and is critical for metabolism. Its activity determines whether a person suffers from fatty liver in one case or ketosis in the other. The discovery will help in better understanding of why some people has a speedy metabolism and others struggle to control their appetite. This would be a major breakthrough in tackling the obesity crisis faced by humans.

Diamond-Studded Planets

Recent findings have revealed that some stars in the Milky Way could be harbouring carbon super earths — gigantic planets completely bereft of life but potentially holding billions of tonnes of diamond. The finding comes from a lab experiment at Ohio State University, where scientists recreated the temperatures and pressures of earth's lower mantle to study how diamonds form there. The goal was to understand what happens to carbon inside plan-

ets in other solar systems, and whether solar systems that are rich in carbon could produce planets that are mostly made of diamond. Wendy Panero, researcher in the School of Earth Sciences at Ohio State along with doctoral student Cayman Unterborn used what they learned from the experiments to construct computer models of the minerals that form in planets composed with more carbon than earth. "It is possible for planets that are as big as 15 times the mass of the Earth to be half made of diamond," said Unterborn, according to a university statement. Our results suggest carbon-rich planets can form with a core and a mantle, just as Earth did," said Panero. "However, the cores would likely be very carbon-rich much like steel and the mantle would also be dominated by carbon, much in the form of diamond," he added.

National Seminar on Eco-Friendly Crop Protection

In recent years, there has been renewed interest in popularizing organic and consumer-safe pest management technologies, to cater to organic and export-focus cultivation of crops in India. A national seminar on Biotechnological approaches in organic and eco-friendly crop protection towards promoting knowledge transfer and technology awareness was organised recently by the Sun Agro biotech research centre (SABRC) and the Department of Zoology, University of Madras in Chennai. He also emphasized the need to adequately support the organic farming communities with appropriate technologies, especially eco-friendly pest control options to

be available at farm level. He also recalled the past initiatives of SABRC in convening two such national seminars earlier in the last five years, with focus on organic and eco-friendly pest management technologies. He explained that this successful campaign for mass production and field release of the imported bioagent was an outstanding success story in biological pest control at national level. About 60 experts from several ICAR institutes and other Universities participated.

Adult Stem Cells in the Heart

An international team of scientists led by Prof Richard Harvey of the University of New South Wales and colleagues at Victor Chang Cardiac Research Institute discovered a new population of adult stem cells in the heart. The findings were published following recent reports that stem cells harvested from human hearts during surgery show promise for reversing heart attack damage. Scientists claimed in their findings, published in the latest edition of the 'Cell Stem Cell' journal that the adult stem cells can augment the development of new regeneration and repair therapies for people who have suffered cardiac failure. This is the first time this new population of stem cells was formally described, and its origins clearly defined. A mouse was used as a model system. The first part of the study included the discovery and characterisation of a new population of multi-potent, adult stem cells that live in the heart. The stem cells were found to be powerful in dividing, and responding to their native environment to form whatever tissue is needed for

repair. The new group of cells are multi-potent, and highly specific to the heart. These cells when translated into the human setting is expected to work well at regenerating and repairing a broken heart or a heart that has suffered injury through heart attack or heart failure. The scientists are of the opinion that population of cells are very high up in the stem cell hierarchy, and can generate a number of progenitor cells that would exist in a healthy heart, ready for action.

Hydro Gel Developed by Researchers

Scientists developed a hydro gel that regenerated healthy and scar-free tissue on skin damaged by severe burns. The hydro gel helps in formatting of new blood vessels and skin including hair follicles. The injured soldiers, fire victims and people with third degree burns can avail of the gel. Third-degree burns typically destroy the top layers of skin down to the muscle. The treatment involves, dressing up the wound, which includes hydro gel and 3D framework of polymers.

Saguna Baugh

Saguna Baug is a farming outfit at Malegaon-Neral of Raigad District. It was set up as a role model to inspire those who move away from farming. Started by a Gandhian freedom fighter, popularly known as Harikaka Bhadsavle it is presently being taken care by his son. After twenty years of tedious and persistent efforts this beautiful agricultural project is wide-open for visitors.

Oxidative Stress Damages DNA

Researchers have now decoded the mechanism that repairs DNA damaged in this way. This repair mechanism could lead to less invasive approaches in cancer therapy.

Pattern of Hydrogen Bonds

A pattern of hydrogen bonds between odorant and receptor, accounting for the specificity of the olfactory sensors has been found. Computer simulations helped predict if odorants activate a certain receptor or not.

Bees, Flowering Plants Adjust to Earlier Spring

An analysis of bee collection data over the past 130 years shows that spring arrives about 10 days earlier than in the 1880s, and bees and flowering plants have kept pace by arriving earlier.

Maturation Clock

An increase in fruit yield might be achieved by manipulating a molecular timer that determines the number of branches that make flowers.

Small Spider's Brains Overflow into Their Legs

Smithsonian researchers report that the brains of tiny spiders are so large that they fill their body cavities and overflow into their legs. As the spiders get smaller, their brains get proportionally bigger.

New horned dinosaur announced
A new species of horned dinosaur was just announced by scientists, nearly 100 years after the initial discovery of the fossil.

Stradivarius Violin

Using computed tomography imaging and advanced manufacturing techniques, a team of experts has created a reproduction of a 1704 Stradivarius violin.

Fire & Wind

Firstly, consider the presence of a low velocity wind. (say, virtually, still air). At any moment of time, this wind is just sufficient to sustain the fire. That is, it functions just as an 'element.' Obviously, it cannot provide any motive force (kinetic energy) for the fire (flame). Hence, the fire cannot spread. Ultimately, it blows out. Secondly, consider the presence of a high velocity wind. At any moment of time, there is not only sufficient supply of air to sustain the fire but also there is adequate air to provide motive force. Thus, its function is two-fold: as an element and as a motive force. Hence, the fire spreads.

Bacteria Live Inside Cells

Bacteria build camouflaged homes for themselves inside healthy cells, and cause disease, by manipulating a natural cellular process.

Vanishing Elephants, Rise of Modern Humans

With the disappearance of elephants in the Middle East, new hominids who had to be more agile

and skillful to hunt smaller and faster prey took over the Middle Eastern landscape and eventually replaced *Homo erectus*.

300 Year Old JACK Tree

The tree is presently in the field of farmer Mr. K. Narasimhaiah and is nearly 300 years old and the tree bears nearly 300 fruits annually, which the farmer sells for Rs 20,000-Rs.30,000.

Evolution & Skull Shape

Skull shape did not occur independently through separate evolutionary events, but by actually precipitating each other.

Cassini Delivers Holiday Treats

Radio signals flying clear across the solar system from NASA's Cassini spacecraft have delivered a holiday package of glorious images, including those of Saturn's moon Titan and other icy baubles orbiting Saturn.

New Kind of Metal

New experiments and computations have revealed that iron oxide undergoes a new kind of transition under deep-Earth conditions due to high pressures and temperatures (as atoms, electrons are squeezed together).

Darwin About Emotions

Contrary to what many psychological scientists think, people do not all have the same set of biologically 'basic' emotions.

Genes of Thyroid Cancer Found

Three genes that increase the risk of thyroid cancer, which has the largest incidence increase in cancers among both men and women, have been discovered, raising important details relevant to diagnosis and treatment.

Why Alcohol Makes Some Aggressive

If people who focus on the here and now, without thinking about the impact on the future, tend to be aggressive even when sober, the aggressive effect generally gets greatly magnified when they are drunk.

Foetal Arsenic Exposure

A study advances our understanding of the sources of exposure to arsenic and the potential for consuming harmful levels of arsenic via rice. Arsenic exposure during pregnancy has health risks to the fetus.

Steroids to Retina

Steroids hitching a ride into the retina on nanoparticles called dendrimers offer a new way to treat age-related macular degeneration and retinitis pigmentosa. The steroids target damage-causing cells.

Cornea Gene Discovered

Since a transparent cornea is essential for vision, the eye has evolved to nourish the cornea without blood vessels. A gene plays a major role

in maintaining clarity of the cornea in humans.

Elderly as Fast as Young in Some Brain Tasks

Healthy older people can be trained to respond faster in some decision-making tasks without hurting their accuracy — meaning their cognitive skills in this area aren't so different from younger adults.

Sauropoda Dinosaur

For the first time, the fossil remains of sauropoda has been recorded in Antarctica. Until now, remains of the herbivorous dinosaurs had been recovered from all other continental landmasses.

Prehistoric Wood Found

Under the cold clear waters of Lake Huron, researchers have found a five-and-a-half-foot-long, pole-shaped piece of wood that is 8,900 years old.

Brighter Future For Solar Energy

The efficiency of conventional solar cells can be increased up to 66 per cent by using an organic plastic semiconductor material. It is based on harvesting double the number of electrons from one photon.

Left-Handedness is a Normal Variant

Most of the time, left-handedness is simply a naturally occurring, normal variant. In some cases, however, it is disadvantageous and may well

reflect a genetic defect or early developmental disturbance.

Microbes in Mars-like Conditions

Microbes from ice within a lava tube have been found to thrive in cold, Mars-like conditions. They can tolerate temperatures near freezing, low oxygen levels, and can grow in the absence of organic food.

New Vaccine Attacks Breast Cancer in Mice

A new vaccine developed at the University of Georgia and the Mayo Clinic in Arizona dramatically reduces tumours in a mouse model that mimics 90 per cent of human breast and pancreatic cancer cases.

Frogs Find Mates With Matching Chromosomes

When it comes to love songs, female tree frogs are pretty picky. Certain female tree frogs may be remarkably attuned to the songs of mates who share the same number of chromosomes as they do, says a new study.

Double Destruction Due to 'Double Tsunami'

The destructive tsunami generated by the March 2011 Japan earthquake was a 'merging tsunami' that doubled in intensity over rugged ocean ridges, amplifying its destructive power before reaching shore.

Record Massive Black Holes Discovered

Astronomers have discovered the largest black holes to date — two monsters with masses equivalent to 10 billion suns that are threatening to consume anything, even light, within a region five times the size of our solar system.

Solar Storms Could Sandblast the Moon

Solar storms and associated Coronal Mass Ejections (CMEs) can significantly erode the lunar surface according to a new set of computer simulations by NASA scientists. This could also cause atmospheric loss for Mars.

Comet Lovejoy Snapped

The recently discovered Comet Lovejoy has been captured in stunning photos and time-lapse video taken from the European Southern Observatory's Paranal Observatory in Chile.

Global CO₂ Emissions

Global carbon dioxide emissions from burning fossil fuels have increased by 49 per cent in the last two decades, according to the latest figures by an international team.

Science & Technology



Cricket

India - West Indies One Day Series

India beat West Indies by 34 runs to win the fifth and final cricket one-day match and recorded an emphatic 4-1 series triumph in Chennai on 11 December 2011. Electing to bat, India scored 267 runs with the loss of six wickets in the stipulated overs. Manoj Tiwary 104 and Virat Kohli 80 were the top scorers for India. In reply, West Indies reached as close as 233 in 44.1 overs. K. Pollard 119 and A Russel 53 were top scorers for West Indies. Darren Sammy was the captain of West Indies while Virender Sehwag was the captain of Indian side for this series. Gautam Gambhir was the stand-in captain for the last one-dayer. India's Manoj Tiwary was declared Man of The Match and Indian batsman Rohit Sharma got Man of the Series Award. Manoj Tiwary and K. Pollard scored their international one day career's first centuries in this match. India and West Indies played this five-oneday match series from 29 November 2011 to 11 December 2011.

Pakistan - Bangladesh Test Series

Pakistan defeated Bangladesh by seven wickets in the second and final cricket Test in Dhaka on 21 December 2011. Pakistan by defeating Bangladesh in the second test was able to to sweep the series 2-0. Pakistan was set 103 to win after bowling Bangladesh out for 234 in its second innings and achieved the target in the final session. Pakistan captain Misbah-ul-Haq secured the victory by hitting a six after Mohammad Hafeez made 47 and Azhar Ali chipped in with 34. Earlier, left-arm spinner Abdur Rehman took 4-51 to restrict Bangladesh.



Tennis

Davis Cup

Spain won its fifth Davis Cup title after Rafael Nadal defeated Argentina's Juan Martin del Potro 1-6 6-4 6-1 7-6 (0) on 4 December 2011. The victory earned Nadal his first title since winning his sixth French Open in June 2011. Nadal with the victory stretched his record on clay to 16-0. Nadal earned his 20th straight victory since debuting

in the competition in 2004. Nadal caught Del Potro out with one of 35 winners to take the second set and cruise through the third set. However Potro's late fightback broke Nadal four times in the fourth set to send it to a tiebreaker, where Nadal raced ahead without losing a point before securing victory with a forehand winner. Argentina remained the only nation to play in four Davis Cup finals and never win one.

Barclay's ATP World Tour Finals

Swiss tennis star Roger Federer defeated Jo-Wilfried Tsonga of France in their singles final tennis match at the Barclay's ATP World Tour Finals, in the O2 arena in London on 27 November 2011. The victory earned him a record sixth ATP World Tour Finals title.

The victory also helped him move ahead of Pete Sampras and Ivan Lendl on the list of Tour Finals champions in the 100th final of his career.

Federer has won 70 trophies in his career and has also equalled Lendl's record of 39 match wins in the end-of-season event.

Federer received the winners' cheque worth \$770,000. For the first time since 2002 he ended the season without a Grand Slam title.



Badminton

BWF World Super Series Badminton Championship

Indian ace badminton player and World No. 4 Saina Nehwal of India was defeated by World No. 1 Wang Yihan 18-21, 21-13, 21-13 in the women's singles final of the \$500,000 BWF World Super Series badminton championship in China on 18 December 2011. In 2011 Saina won only the Swiss Open Super Series title. Wang proved to be too good for the Indian shuttler in the crucial phases of the 72-minute final. The scores were levelled twice, four-all and 11-all, before the Chinese picked seven points in a row to take a huge 18-11 lead. With this win, Yihan kept her 100 per cent record against Saina intact, having now beaten her in all their four faceoffs so far. Saina Nehwal had created history by becoming the first ever Indian to enter the singles final of the World Super Series. Gutta Jwala and V. Diju were the only other Indians who made it to the final in mixed doubles in the 2009 edition.

India Open Grand Prix
Indonesia's experienced shuttler, Taufik Hidayat, won his first Men's Singles title of 2011 at the 2011 \$120,000 Syed Modi India Open Grand Prix Gold badminton championship when he defeated Sourabh Verma of India. Taufik is currently World Number 12 in Men's Singles

world rankings. Hidayat who ended his title drought of 2011 with a 21-15, 21-18 triumph over Sourabh received \$9,000 as the prize money. In the first set of this final battle, Taufik played with precision and won it with a comfortable score. In the second game, Sourabh elevated his level of play and matched the speed of Taufik but lost the set with a decent margin. Ranked 72 in the world and on his debut season on the senior international circuit, Sourabh had won the Bahrain International Challenge in 2011 and had also reached the quarterfinals of TATA Open India International Challenge, Thailand Grand Prix Gold and Indian Super series.

The women's singles final was won by third seed Inthanon Ratchanok of Thailand. Naoki Kawamae & Shoji Sato (Jpn) emerged winners in Men's doubles while in women's doubles, Shinta Mulia Sari & Lei Yao of Singapore defeated Miyuki Maeda & Satako Suetsuna of Japan to emerge champions.



Motor Racing/F1

JK Tyre-FMSCI National Racing Championship

Ameya Walavalkar of Mars Racing registered his sixth win of 2011 in the Formula LGB Swift class, thereby clinching his maiden drivers' championship title in the JK Tyre-FMSCI National Racing Championship at the MMRT in Irungattukottai on 27 November 2011. Walavalkar finished

22 points ahead of teammate R. Deepak, who came fifth in the race. Sarosh Hataria of Meco Motorsports stood second. Karthik Krishna finished third but was penalised for overtaking when the yellow flag was being waved and thus conceded his podium place to Chitesh Mandody. Rahil Noorani, a championship contender in the Polo R Cup series was excluded from the competition after a post-race incident in the pits after he vented his frustration at Ajay Kini.



Golf

Goodricke East India Amateur Golf Championship

Delhi's Honey Baisoya became the youngest winner of the 22nd Goodricke East India amateur golf championship at RCGC on 25 December 2011. The 15-year-old defeated the country's No.1 amateur, S. Chikkarangappa to win 3 and 2. Both had to play two rounds of 36 holes on the final day. Baisoya secured a winning start after making birdies on first, fourth, fifth, ninth, 12th and 15th in the first round of 18 holes where both Baisoya and Chikka halved 11 holes. Though, Chikka won on seventh, 11th and 14th, Baisoya was 2-up after the first round. In the second round, Baisoya again took an early lead after making a birdie on the first to go 3-up though Chikka kept giving a tough competition. Baisoya in total had six birdies in the first round of 18 and three more in 16 holes in the sec-

ond round while Chikka had three birdies in both rounds. Baisoya also dropped fewer bogeys.



Football

Indian Player of the Year

India striker Sunil Chhetri was on 20 December 2011 voted Player of the Year by the All India Football Federation. He was chosen by I-League coaches from a five-player shortlist. He will receive a cash award of Rs 2 lakh and a silver plaque. The criteria of selection were Performance for India and general conduct on and off the field. Chhetri scored 13 goals in 17 internationals in 2011, which was the highest the by an Indian. Chhetri has also scored 11 goals in 20 appearances for I-League club Mohun Bagan. He won the man of the championship in the SAFF Championship in New Delhi in 2011. He has also been awarded the prestigious Arjuna Award in the past. I.M.Vijayan was the first recipient of the award in 1992. In 2010 the award was bestowed on Gouramangi Singh

6th SAFF Championship

India won its 6th SAFF Championship title against the newcomer, Afghanistan on 11 December 2011. India's star striker Sunil Chhetri won all the individual awards in the tournament. India was a five time SAFF champion before it won the 2011 SAFF. The other participating nations in the 2011 South Asian Football Federa-

tion Championship (SAFF) were Afghanistan, Sri Lanka, Bhutan, Bangladesh, Maldives, Nepal and Pakistan. Winner India received a prize purse of USD 50,000 while Afghanistan took home USD 25,000. In addition, All India Football Federation announced a cash award of Rs. 1 lakh for each player for winning the tournament.



Hockey

Champions Challenge Hockey Tournament

Belgium defeated India 4-3 in the final of the Champions Challenge hockey tournament in Johannesburg, South Africa on 4 December 2011. The victory enabled Belgium, who are already through to the 2012 London Games, to qualify for the next Champions Trophy in Australia. The Belgium side was coached by Colin Batch. Tom Boon scored the winning goal for Belgium and in the process became the joint top scorer of the tournament along with Justin Reid Ross of South Africa with eight goals. VR Raghunath, Sandeep Singh and Shivender Singh scored for India. Sandeep Singh finished the tournament with seven goals, all through penalty corners, and won the Player of the Tournament award.

Four-nation Tournament

The Indian women's hockey team defeated Ireland 4-1 win to clinch the bronze medal in the four-nation tournament held in Parana, Argen-

tina in December 2011. Both the teams were locked 1-1 at half-time but India came back strongly in the second session to score three goals. Jaspreet Kaur, Anuradha Thokchom, Vandana Katariya and Preety Sunila Kiro 69th scored for India India thus won bronze medals at both the four-nation tournaments held at Buenos Aires and Parana on the current tour. In the final World champion Argentina defeated South Africa 2-0 to win the tournament.



Archery/Shooting

32nd Sahara Senior National Archery Championship

The Archery Association of India (AAI) announced in late December 2011 that the 32nd Sahara senior National archery championship (recurve and compound) will be held at the JRD Tata Sports Complex, Jamshedpur from 24 to 29 January 2012. The meet is to serve as the selection trials for aspirants of a place in the Indian archery team for the first Asian Grand Prix at Bangkok scheduled to be held 14 to 20 February 2012. The best five finishers in the men's recurve section will vie for three places in the Indian team, and the best five women will vie for one spot in the women's recurve team at a selection trials to be held at SAI, Eastern Centre, from 3 to 6 February 2012. The AAI retained Jayanta Talukdar and the three women archers, Chekrovolu Swuro, Deepika Kumari and L. Bombayla

Devi, in the Indian team for all international competition till the London Olympics since they earned the country four Olympic quota places.



Athletics

Fukuoka Men's Marathon
Josphat Ndambiri of Kenya won the Fukuoka men's marathon in Japan winning the 42.195km race in 2hrs 7mins and 36secs on 4 December 2011. Mwangi stood second. Both Ndambiri and Mwangi currently reside in Japan. Mwangi crossed the line one minute and two seconds after Ndambiri who had opened up a sizeable lead following the 35km mark. Yuki Kawauchi of Japan finished in third place with a time of two hours, nine minutes and 57 seconds. The Fukuoka marathon, now in its 64th year, is widely regarded as a prestigious title. In 2011 the occasion was treated as valuable preparation for next year's Olympics in London.



Chess

World Women's Team Chess Championship

The Indian team finished at the fourth position in the World Women's Team Chess Champion-

ship at Mardin, Turkey on 27 December 2011. India's chances of winning a medal was blown away following a loss to Georgia and then China. The losses by Tania Sachdev and Soumya Swaminathan of India paved the way for an easy Georgian victory in the end.

China won the gold medal with 16 points while the silver was claimed by the Russians who finished with 13 points in all. Georgia ended with the bronze while India and Ukraine were tied for the fourth spot. Ukraine caused the biggest surprise of the championship with a sensational 2.5-1.5 victory over leaders China. Though China was not much affected, the helped the Ukrainian eves come into reckoning after a rather subdued performance in the first half.

London Chess Classic's Open
Indian Grandmaster Abhijeet Gupta won the London Chess Classic's open section, with a hard-earned victory over Grandmaster Keith Arkell of England. Abhijeet, a former world junior champion and reigning national champion, scored eight points in all. The chess tournament was held from 3 December 2011 to 12 December 2011.

Another Indian, International Master Sahaj Grover pulled himself to the second spot after defeating English Grandmaster Peter Wells in the final round of the event. Sahaj, who scored 7.5 points in all.



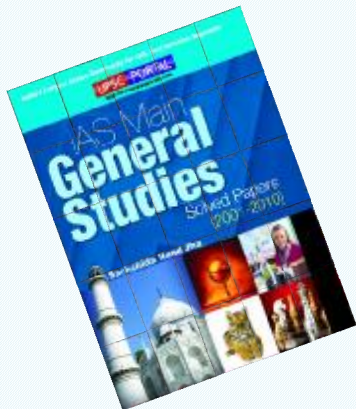
Volleyball

Vajpayee Cup

Kerala defeated Andhra Pradesh in straight sets to lift the men's title in the 10th All-India Invitational volleyball tournament for the Vajpayee Cup on 25 December 2011. Kerala won the game 25-20, 25-18, 25-18. Karnataka outdid Tamil Nadu to occupy the third position in the men's category.

The Kerala on the other hand defeated Central Railway (Mumbai) and to claim the title. Tiji Raju and N. Bijina led the turnaround as it won 20-25, 18-25, 25-23, 26-24, 15-13. The women had to come back from two sets down to take the title. The Kerala women lost the first set 20-25 before finding themselves in deep trouble after losing the second set 18-25. In the deciding set Kerala outdid Central Railway 15-13 to clinch the title. Southern Railway (Chennai) finished third in the women's sections.

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Award & Prizes

Sahitya Akademi Awards

Twenty-two writers selected on 21 December for the prestigious Sahitya Akademi awards for 2011. Eight books of poetry, seven novels, three essays and one each short stories, narrative history, biography and play were selected for the awards. Writers in 23 languages are recognised every year by the Akademi. The books were selected on the basis of recommendations made by a jury of three members in each language. The awards that are given every year and contain an engraved copper plaque, a shawl and a cheque of Rs 1 lakh.

Sahitya Akademi awards for Poetry Poets chosen for the award includes: Late Kabin Phukan (Assamese), Manindra Gupta (Bengali), Premananda Mosahari (Bodo), Naseem Shafaie (Kashmiri), Melvyn Rodrigues (Konkani), Harekrishna Satapathy (Sanskrit), Aditya Kumar Mandi (Santali) and Khaleel Mamoon (Urdu).

Sahitya Akademi awards for Novels Novelists who won the award include: Kashinath Singh (Hindi), Kshetri Bira (Manipuri), Kalpanakumari Devi (Odia), Baldev Singh (Punjabi) and Atul Kanakk (Rajasthani).

Tamil novelist Su Venkatesan's, debut novel Kaval Kottam earned him the coveted Sahitya Akademi Award in Tamil section. The book is about the 600-year old history of the city of Madurai and a security system that prevailed there

Awardees in Essays Category
Lalit Magotra (Dogri), Grace (Marathi) and Samala Sadasiva (Telugu) received the award for their books on essays.

Awardees in Other Sections
Historian Ramachandra Guha was chosen for the award for his book of narrative history - India After Gandhi. Mohan Parmar (Gujarati) was chosen for his short stories, M.K. Sanu (Malayalam) for his biography and Mohan Gehani (Sindhi) for his book on plays.

Bharatendu Harish Chandra Awards

Fourteen persons (Leading writers and journalists) were given Bharatendu Harish Chandra Awards for 2009 and 2010 by Minister of State for Information and Broadcasting, S Jagathrakshakan on 28 December 2011.

2009 Winners

The first prize in the Journalism and Mass Communication category for the year 2009 was awarded to Dilip Chandra Mandal for his

manuscript Corporate, Loktantra aur Paid News. Kumud Sharma's book Samachar Bazar ki Naitikta bagged the second prize. The third prize went jointly to Shivananda Kamde for his book Cartoon Patrakarita and Dr. Akela Bhai for his book Radio Sahitya aur Patrakarita. In the Women's issues category, the first prize for 2009 was given to Lata Kot for her manuscript Adha Asmaan Hamara. The first prize in Children's Literature category for 2009 was given to Ghamandi Lal Agrawal for his book 'Geet Gyan Vigyan Ke' and the second prize to Renu Saini for her manuscript 'Bachpan ka Safar'.

2010 Winners

For 2010 the second prize in Journalism and Mass Communication category was awarded to Pranjal Dhar's manuscript Samkaleen Vaishwik Patrakarita Mei Akhbaar. No one was awarded first prize for 2010 in this category. In Women's issues category for 2010, Suman Rai's book Gharelu Hinsa mein Mahila Sanrakshan Adhiniyam 2005, 2006 got the first prize. Sanjeev Jaiswal Sanjay's book Dooba Hua Qila and the book Cycle Par Thaa Kavva by Prabhat received the first and second prize respectively in the Children's Literature category. In the National Integration category for 2010, Shiv Kumar Rai's manuscript 'Meri Jati Bhartiya' was given the first prize.

About Bharatendu Harish Chandra Awards: The Bhartendu Harishchandra Awards are given to published or unpublished books in four categories- Journalism and Mass Communication, Women's Issues, Children's Literature and National Integration. The awards were instituted in 1983 to encourage original Hindi writings on topics related to journalism and mass communication. Awards for writings on women's issues, children's literature and national integration were included in from 1992-93. The Awards scheme is coordinated by Publications Division, Ministry of Information and Broadcasting, Government of India. The Ministry of Information & Broadcasting, increased the Bhartendu Harishchandra award money from the year 2009.

For journalism and mass communication categories, the first prize now carries an award of Rs 75000, up from Rs 35000 earlier. The amount for the second prize was increased from Rs 25000 to Rs.50000 and the third from Rs.20000 to Rs.40000. For books in category of Women's Issues, Children's Literature and National Integration, the first prize carries an award of Rs 40000 instead of Rs.15000 and the second prize Rs.20000 instead of Rs.10000.

Mahatma Gandhi International Award

Tibetan spiritual leader, the Dalai Lama was presented the Mahatma Gandhi International Award for Peace and Reconciliation on 4 January 2011, the fourth day of the ten-day Kalachakra initiations. The grand daughter of Mahatma Gandhi, Ila Gandhi, presented the award, insti-

tuted in 2003, to the Dalai Lama at the Kalachakra ground. Ila Gandhi, who is based in South Africa, is chairman of the Gandhi Development Trust that gives the award. Tibetan Nobel Peace Laureate on the occasion encouraged everyone to use human intelligence in challenging and overcoming negative emotions with positive emotions. He mentioned in his speech that disarmament is needed to attain complete non-violence. He also mentioned that mental peace results in non-violent actions and mental unrest cause the opposite. He concluded by stating that the real path to a happy life is not through money or power but through honesty and compassion. The Dalai Lama was supposed to have received the award in October 2011 as part of a much anticipated visit to South Africa. The visit however had to be called off following a five-week wait for a visa to be issued. Former recipients of the Mahatma Gandhi International Award include Burmese pro-democracy leader Aung San Suu Kyi, South African leader Nelson Mandela and Tanzania's Julius Nyerere.

Justice P.N. Bhagwati Award

Former president A.P.J. Abdul Kalam presented the Justice P.N. Bhagwati Award to O.P. Jindal Global University chancellor and managing director of Jindal Steel and Power Ltd, Naveen Jindal on 6 December 2011. The award was conferred upon Jindal for his outstanding contribution to legal education and corporate philanthropy. Justice P.N. Bhagwati Award has been instituted by the Capital Foundation. Naveen Jindal is

the Founding Chancellor of the O.P. Jindal Global University. He is also a Member of Parliament, the Chairman and Managing Director of Jindal Steel and Power Ltd (JSPL), and a sports enthusiast. The O.P. Jindal Global University has four schools: Jindal Global Law School (JGLS), Jindal Global Business School (JGBS), Jindal School of International Affairs (JSIA) and Jindal School of Government and Public Policy (JGSP). The Bhagwati Award was also given to Arun Mohan, a senior advocate in the Supreme Court, in recognition of his outstanding contribution to access to justice. Human Resource Development Minister Kapil Sibal and Law and Justice Minister Salman Khurshid were conferred the Justice V.R. Krishna Iyer Award on the occasion.

Life Time Achievement Award

Lord Swraj Paul, leading NRI industrialist was conferred with the Life Time Achievement award for his outstanding contributions in various fields. The award, instituted by an Indian company Powerbrands, was presented to Lord Paul on 12 December 2011 by Subrata Roy, chief of the Sahara Group.

Lord Paul, Chairman of the Caparo Group, dedicated the award to the ordinary people of India who he feels have little, but never complains. Philanthropist and Labour politician, Lord Paul is the chancellor of the University of Wolverhampton and the University of Westminster. Paul was awarded the Padma Bhushan by the Government of India in 1983. He was elevated to the British Peerage in 1996. Raghupati Singhania of J K

Tyres was earlier given the Powerbrands Hall of Fame Award.

42nd International Film Festival of India (IFFI)

The 42nd edition of International Film Festival of India (IFFI) was held in Panaji, Goa from 23 November to 3 December 2011. Film star Shah Rukh Khan inaugurated the 42nd edition of IFFI. The inaugural ceremony was marked by presentation of Life Time Achievement award, which was revived after almost 10 years to French film maker Bertrand Tavernier by Shah Rukh Khan. The opening film of the festival was The Consul of Bordeaux, directed by Francisco Manso and Joao Correa. The 42nd IFFI came to an end with the Asia premiere of the film The Lady directed by Luc Besson. For the first time, the inauguration ceremony was held 30 km away from the main action point. There was a first-ever open screen on a football ground for free display of soccer films. The festival was the first to feature the new sections like 3D, Animation (Sketches on Screen) and Festival Kaleidoscope films.

Awards presented during the Festival: The 42nd International Film Festival of India come to an end at the Kala Academy in Panaji with the presentation of awards in five different segments. The Golden Peacock Award for the Best Film was given to a Colombian Film Porfirio. The Chief Guest of the closing ceremony, Southern Superstar, Suriya presented the award to the Director Alejandro Landes and Producer, Francisco Aljure. The Silver Peacock Award for Best Actor (Female) category was given to the actor

Nadezhda Markina for her role in the Russian film Elena. Whereas, the Silver Peacock Award for Best Actor (Male) category was won by Sasson Gabey for his role in an Israeli film Restoration. The Special Jury Award was presented to Salim Ahamed for directing Malayalam film Adaminte Makan Abu meaning Abu, Son of Adam. The Special Jury Award carries a Silver Peacock Trophy, a certificate and Rs. 15 lakh. The five members Jury under the chairmanship of Adoor Gopalakrishnan had screened 14 films from as many countries and unanimously decided the awards.

Gomant Vibhushan

World renowned architect and Goa's son-of-the-soil Charles Correa was bestowed with Goa's highest civilian honour, the Gomant Vibhushan, on the eve of the Golden Jubilee of Goa's Liberation on 18 December 2011. The award was presented to him by Goa governor K Shankaranarayanan. Goa governor presented Correa with the over half-metre high, glass-encased brass replica of Goa's state symbol along with a cash award of Rs 5 lakh and a citation in one of Correa's own architectural creations, the Kala Academy at Panaji. Correa's architectural genius and projects dots not only Indian cities but also cities around the world, including Boston and Lisbon. Correa is the second recipient of the Gomant Vibhushan, the first being eminent nuclear scientist Anil Kakodkar, who was awarded the Gomant Vibhushan in 2010. Correa has earlier been conferred with India's Padma Shri and Padma Vibhushan.

Clean Development Mechanism Project Award

Delhi Metro Rail Corporation (DMRC) won a green award for reducing emissions of polluting gases in the national capital by 6.3 lakh tons every year. The best Clean Development Mechanism (CDM) project award was presented at Urban Mobility Conference, 2011 which concluded in New Delhi on 7 December 2011. The best CDM award was given to Delhi Metro for its Modal Shift Project under which it became the first Metro rail and rail-based system in the world to be certified by United Nations for getting carbon credits for reducing green house gas (GHG) emissions. Delhi Metro, which ferries around 18 lakh people daily, helped to reduce pollution levels in the city by 6.3 lakh tonnes every year, thus helping in reducing global warming. DMRC director (Works) Mangu Singh received the award on the organisation's behalf. This is the second CDM project from DMRC to be registered with the UN in the last three years. DMRC's first CDM project on regenerative braking had also achieved many international firsts apart from earning valuable foreign exchange for the country.

Grammy Award

The Academy of Recording Arts and Sciences on 21 December 2011 chose Apple co-founder Steve Jobs to be posthumously honoured with a Grammy award for his contribution to music technology. Jobs is to be honoured as a creative visionary. He is one of 11 people who will be

honoured with special awards. Jobs, who died on 5 October 2011 of pancreatic cancer, will receive a Trustees Award on 13 February 2012 for helping create products that transformed the way music, TV, movies and books are consumed. Apple Computer Inc first received a Technical Grammy Award in 2002 for contributions of outstanding technical significance to the recording field. Bandleader and composer Dave Bartholomew, recording engineer Rudy Van Gelder will also receive the award along with Jobs. The academy also picked the Allman Brothers, Glen Campbell, Diana Ross and Brazilian pianist/singer/guitarist Antonio Carlos Jobim as recipients of Lifetime Achievement Awards. Jobim was known for composing The Girl from Ipanema, a worldwide hit in the mid-1960s which won a Grammy for Record of the Year in 1965.

Trumpeter Wayne Jackson, saxophonist Andrew Love of the Memphis Horns, country legend George Jones, and the late Gil Scott-Heron were also named as recipients. German sound-technology firm Celemony and the late audio engineer Roger Nichols, who worked with artists including Ross, Placido Domingo, James Taylor and Stevie Wonder, were also recognised with Grammy Technical Awards. The Trustees Awards are given to people who make a contribution to music beyond performance. The Academy of Recording Arts and Sciences also chose seven performers to receive Lifetime Achievement Awards: The Allman Brothers Band, Glen Campbell, Antonio Carlos Jobim, George Jones, The Memphis Horns, Diana Ross, Gil Scott-Heron.

Shakti Bhatt First Book Prize

Jamil Ahmad was declared the winner of the Shakti Bhatt First Book Prize for his book The Wandering Falcon at the British Council in New Delhi on 21 December 2011. The Wandering Falcon, is a narrative about the lives of tribal people along the borders of Afghanistan, Pakistan and Iran. The book contained personal sights, sounds, actual faces and conversations. The book that has won critical acclaim worldwide was written decades ago and then went into hibernation for 40 years. He started writing the book in 1971, it was completed by 1973 and then it hibernated for 40 years.

Born in Jalandhar in 1933, Jamil Ahmad is a Pakistani national. He had not agreed to the demands of the publishers, which eventually led to the book being locked away for four decades. The book was published by Hamish Hamilton — an imprint of Penguin earlier in 2011. Ahmad was posted in Quetta in 1959 where he first came into contact with tribals and was fascinated by their lives and their stories.

The former civil servant from Pakistan, Ahmad gave away the prize money of Rs. 1 lakh to St. Columba's School, where he was enrolled from 1941 to 1944. The prize is set up in memory of writer and editor Shakti Bhatt. A shortlist of six books was announced ahead of the prize ceremony. The shortlist included The Collaborator by Mirza Waheed, The Truth About Me by A. Revathi, Chinaman by Shehan Karunatilaka, A Free Man by Aman Sethi and R.D. Burman: The Man, The Music by Anirudha Bhattacharjee and Balaji

Vittal. The winner was chosen by a jury comprising graphic novelist and illustrator Sarnath Bannerjee, writer and blogger Jai Arjun Singh, and novelist Palash Krishna Mehrotra.

Sangita Kalanidhi M.S. Subbulakshmi Award

S.R. Nathan, former President of the Republic of Singapore represented the Sangita Kalanidhi M.S. Subbulakshmi Award to Sangita Kalanidhi-elect Trichy Sankaran at the inauguration of the 85th annual conference of the Music Academy in Chennai on 15 December 2011. S.R. Nathan also inaugurated the 85th annual conference of the Music Academy. On the occasion the second volume of the Sangita Sampradaya Pradarsini was launched. The Music Academy and the Singapore Indian Fine Arts Society (SIFAS) exchanged a memorandum of understanding on education and training in Carnatic music, drafting of syllabus and training of teachers during the inaugural ceremony. The Music Academy pioneered the Margazhi music festival in Chennai, which had evolved into a wondrous phenomenon that greatly enriched the cultural underpinning of the city over the last eight decades. The festival remains unparalleled for its sheer size, aesthetics, quality and undiluted classicism.

Trichy Sankaran: Trichy Sankaran is the mridangam maestro and flag-bearer of the Pudukottai percussive tradition. Trichy is 2011's designate for the Academy's Sangita Kalanidhi. Trichy Sankaran, who is based in Toronto became the first recipient of the Sangita Kalanidhi title in the Pudukottai parampara of his guru

Palani Subramania Pillai. Sangita Kalanidhi M.S. Subbulakshmi Award has been instituted by The Hindu. The award carries a cash prize of Rs. 1 lakh.

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In The News

Appointed



Kim Jong-un

North Korea declared the young untested heir Kim Jong-un as supreme head of the country, as tens of thousands of people rallied in Pyongyang one day after the funeral of his father, Kim Jong-il, to swear their allegiance to the dynastic transfer of power. Kim Jongun, believed to be in his late 20s, was unveiled as successor in September last year, following his father's 2008 stroke. After his father's sudden death Dec. 17, he was rapidly elevated to the top military and party posts, although he has yet to assume those official titles. How much he has consolidated his grip on power before his father's death and whether he would have to depend on caretakers or even regents remain topics of intense speculation and contention among outside analysts. All indications from the North, however, suggest that at least in the public eye, he will not share power with anyone. North Korea said the "great successor" will faithfully follow his father's

songun, or "military-first," policy, which has raised tensions with Washington and Seoul.



Vinod Rai

The Comptroller and Auditor General (CAG) of India, Vinod Rai was on 8 December 2011 elected chairman of the United Nations panel of external auditors. Rai succeeded Norbert Hauser, vice-president of Germany's Federal Court of Auditors as chairman of the United Nations panel of external auditors. As head of the panel, Rai will shoulder the responsibility of overseeing the external audit works and periodical reports on accounts and management of the UN and its specialised agencies. As chairman Rai will oversee the audit of the International Atomic Energy Agency (IAEA), besides setting audit agenda for all UN specialized agencies such as the World Health Organization (WHO), World Food Programme and the World Intellectual Property Organization. Jagbans Singh, director general in the office of the CAG, was elected chairman of the Technical Group of the UN panel. Much of the external auditors' work is determined by the technical group that is mandated to set spe-

cific topics of interest to be taken up for audit.

The accounts and management operations of the UN, the specialized agencies (WHO, WFP, WIPO etc.) and the IAEA are required to be audited and reported periodically by independent external auditors, who are supreme audit institutions of various countries selected by the UN. Rai will give direction to the external auditors and will have a final say in preparation of the reports before they are placed to the UN General Assembly. The findings and recommendations of United Nations panel of external auditors are taken seriously, and the reports are closely monitored for effective implementation.



Ajit Singh

Rashtriya Lok Dal (RLD) leader Ajit Singh was inducted into the Union Cabinet as civil aviation minister on 18 December 2011. President Pratibha Patil administered the oath of office and secrecy to Singh at a ceremony in Rashtrapati Bhavan. The Jat leader will face the challenge of reviving the aviation sector in general and the government-owned

Air India in particular as the new Civil Aviation minister. The Civil Aviation Ministry was held by Overseas Indian Affairs Minister Vayalar Ravi after the elevation of Praful Patel as Cabinet Minister.



Prof. Parvin Sinclair

Noted mathematician and the Pro-Vice Chancellor, IGNOU Prof. Parvin Sinclair was appointed the Director of National Council of Educational Research & Training (NCERT) on 25 December 2011. Parvin will hold the post for five years or until further orders, whichever is earlier. A Ph. D in Mathematics from the University of Mumbai, Prof. Parvin Sinclair has worked in the field of Educational Research and Training since 1979. Parvin Sinclair is currently a Professor with the Indira Gandhi National Open University. Prof. Parvin Sinclair is known for her work in the field of mathematics and designing of course material to suit learners of the subject on the distance mode. With a MSc in Mathematics from IIT-Delhi, Sinclair worked with the TIFR, Mumbai, till 1987 after which she joined the IGNOU. She has been engaged in research work on ways of communicating mathematics to children of all age groups. Sinclair was also Chief Advisor, Mathematics Syllabus Design Committee, NCERT, in 2005 and 2006.

Moncef Marzouki

The National Constituent Assembly

(ANC) of Tunisia elected the leader of the party, Council for the Republic (CPR), Moncef Marzouki as the new President of Tunisia on 12 December 2011. He became Tunisia's first elected president since the North African country's revolution sparked the Arab Spring. He was a leader of the centre-left 'Congress for the Republic' party. Marzouki became interim president with 153 out of 217 votes in the assembly, with three voting against, two abstentions and 44 blank ballots cast as a protest vote by some members. Marzouki's appointment followed an animated debate within the Constituent Assembly focused on the formation of Tunisia's provisional constitution. He had the support of his group and the other two major forces in the Tunisian Assembly, the Nahda Islamic Movement and the Atakotol party.



Rita Menon

Former Textiles Secretary, Rita Menon on 3 January 2011 took over as the Chairman-cum-Managing Director of the India Trade Promotion Organisation (ITPO), which organises exhibitions and trade fairs. She succeeded Rajeev Kher, Additional Secretary in the Commerce Ministry, who was officiating as the CMD of the organisation since August 2011. Rita Menon is a 1975 batch IAS officer of Uttar Pradesh cadre who retired as Textiles Secretary on 31 December

2011. ITPO, among other fairs, is known for its annual flagship event India International Trade Fair.

M.P. Muralidharan

The Union government on 5 January 2012 cleared two key military appointments. Vice Admiral M.P. Muralidharan took charge as the 19th Director-General of the Indian Coast Guard. The position of Coast Guard Chief lay vacant since Vice-Admiral Anil Chopra was promoted as the Eastern Naval Command chief in October 2011. Lt-General Sanjeev Chachra was appointed the next Army military secretary. Prior to taking over as the Director-General, Vice Admiral Muralidharan was the Chief of Personnel at the Integrated Headquarters (IHQ), Ministry of Defence. Earlier he had served as the first Commandant of the Indian Naval Academy at Ezhimala. An alumnus of the National Defence Academy, he was commissioned into the Navy in 1975. During the last three and half decades, he held several significant operational and staff appointments. The Admiral is an alumnus of National Defence Academy and was commissioned into the Indian Navy on 1 Jan 1975. A Navigation and Direction Specialist, he is also a graduate of Defence Services Staff College, Wellington.

Lt-General Sanjeev Chachra

Lt-Gen Chachra is to take over as the new military secretary when Lt-Gen G M Nair retires on 31 January 2012. The military secretary's post gained some prominence after a previous incumbent Avadhesh Prakash faced a court martial in the infamous Sukna land scam case as also due to the ongoing controversy over

Army chief General V K Singh's actual date of birth.

Death



Dev Anand

An icon of Indian cinema and ever-green star Dev Anand died at the age of 88 in London on 3 December 2011 (4 December according to IST) after suffering a massive cardiac arrest. Dharam Dev Anand was born on 26 September 1923 and is more popularly known as Dev Anand. Dev Anand was an Indian film actor, director and producer known for his work in Hindi cinema. Anand came Bombay in the early 1940s and began his career in the military censor's office at Churchgate. He joined his older brother, Chetan, as a member of the Indian People's Theatre Association (IPTA).

Film Career: He was offered a starring role in Prabhat Films' Hum Ek Hain (1946) soon after he joined IPTA. Anand was offered his first big break by Ashok Kumar. He was picked as the hero for the Bombay Talkies production, Ziddi (1948), co-starring Kamini Kaushal. Ziddi went on to become a huge success. Anand started producing films after the success of Ziddi. he launched his own company Navketan in 1949 which, by 2011, had produced 31 films. Dev chose Guru Dutt as director for the crime thriller, Baazi (1951). His acting

in Kala Pani (1958), as the son who is willing to go to any lengths to clear his framed father's name won him his first Filmfare award for Best Actor for the film. He attempted films of tragic genre occasionally like Pocketmaar (1956), Kala Pani (1958), Bombai Ka Baboo (1960) and Sharabi (1964) and tasted success in them as well. Dev also played a few characters with a negative shade, like in Jaal (1952). His first colour film, Guide with Waheeda Rehman was based on the novel of the same name by R. K. Narayan. Guide, directed by younger brother Vijay Anand, was an acclaimed movie. His directorial debut, the espionage drama Prem Pujari, was a flop. He however tasted success with his 1971 directorial effort, Hare Rama Hare Krishna which talked about the prevalent hippie culture. Hare Rama Hare Krishna that launched Zeenat Aman became a cult movie. Dev also became known as a filmmaker of trenchantly topical themes.

Political activity: Dev Anand had been politically active. He led a group of film personalities who stood up against the Internal Emergency imposed by the then Prime Minister of India, Indira Gandhi. He actively campaigned against her with his supporters in Indian parliamentary elections in 1977. He also formed a party called the National Party of India, which he later disbanded.

Awards: The Government of India honoured him with the Padma Bhushan in 2001 and the Dadasaheb Phalke Award in 2002 for his contribution to Indian cinema. He won the filmfare award thrice- Best actor for Kalapani (1958), Best Film for Guide (1966), Filmfare Lifetime Achieve-

ment Award (1991). Lifetime Achievement Award for Outstanding Achievement in Indian Cinema was bestowed on him at IIFA Award in Johannesburg, South Africa in 2003. In 2004, he was given the Living Legend Award by the Federation of Indian Chamber of Commerce and Industry (FICCI) in recognition of his contribution to the Indian entertainment industry.

He received several international award as well: He was honoured by an Award at the hands of the then First Lady of the United States of America, Hillary Rodham Clinton in July 2000. He was also awarded the Indo-American Association Star of the Millennium Award. Donna Ferrar, Member New York State Assembly, honoured him with a New York State Assembly Citation for his Outstanding Contribution to the Cinematic Arts Worthy of the Esteem and Gratitude of the Great State of New York on 1 May 2001.

He was honoured with a Special National Film Award by the Government of Nepal at Nepal's first National Indian film festival in Stockholm in 2005.

Kim Jong-il

The enigmatic leader of North Korea Kim Jong-il passed away on 17 December 2011 after he suffered a massive heart attack on a train. The news of his death was announced by the state television from the North Korean capital, Pyongyang on 19 December 2011. An autopsy conducted mentioned that the death was caused by physical and mental over-work. Kim Jong-il led his nation for 17 years and through a devastating famine while frustrating the United States and other global pow-

ers with approach to talks on giving up nuclear arms in return for food and other assistance. Kim took over after his father and founding President Kim Il-sung died in 1994, coming to power with a reputation as a playboy. In the mid- to late-1990s he presided over a famine which killed hundreds of thousands of his people. Kim Jong-il was born as Yuri Irsenovich Kim on 16 February 1941/2. He was the General Secretary of the Workers' Party of Korea, the ruling party since 1948, Chairman of the National Defence Commission of North Korea, and the supreme commander of the Korean People's Army, the fourth-largest standing army in the world. In April 2009, North Korea's constitution was amended to refer to him implicitly as the supreme leader. On 24 December 1991, Kim was also named supreme commander of the North Korean armed forces.



Kiro Gligorov

Kiro Gligorov, the first democratically elected president of Macedonia died in Skopje on 1 January 2012. He had led his nation through a bloodless secession from the former Yugoslavia. Gligorov had become president of Macedonia in January 1991 when it was still a Yugoslav republic. He led his countrymen through a referendum in which they voted for independence, and the territory of 2.1 million people became the only republic to secede from Yu-

goslavia without a war. Gligorov served two consecutive presidential terms, leading the nation from January 1991 to November 1999.

S.Bangarappa

Veteran politician and former Chief Minister of Karnataka S.Bangarappa who was the Chief Minister of Karnataka from 1990-92 died on 26 December 2011. He was born on 26 October 1932 in Kubatur village of Shimoga District, he was a highly respected leader among backward classes. He represented Shimoga constituency in the 14th Lok Sabha. S Bangarappa changed parties and constructed parties but finally landed in Janata Dal S Party. Bangarappa, who had tested his political fortunes in the Bharatiya Janata Party (BJP) after a long stint in Congress, had recently joined the H D Devegowda-led Janata Dal (Secular). The three time Lok Sabha member represented Shimoga constituency and has been a legislator several times. S Bangarappa was a keen enthusiast in culture of the state. Bangarappa was in to stage plays, singing and was part of one or two films in Kannada. S Bangarappa was instrumental in holding the first Indian international film festival in Bengaluru in 1993.

Vaclav Havel

Former Czech president Vaclav Havel who had been suffering from chronic respiratory problems died on 18 December 2011 at the age of 75. He was one of the leading anti-Communist dissidents of the 1970s and 1980s. He was the tenth and last president of Czechoslovakia (1989–92) and the first President of the Czech Republic (1993–2003). He played a seminal role in the Velvet

Revolution that won his people their freedom. The peaceful resistance pursued by him exposed the emptiness of a repressive ideology. He was his country's first democratically elected president after the Velvet Revolution. The non-violent Velvet Revolution ended four decades of repression by a regime which Havel ridiculed as Absurdistan. Vaclav Havel, the dissident playwright wove theatre into politics to peacefully bring down communism in Czechoslovakia and thus became a hero of the epic struggle that ended the Cold War.

Vaclav Havel was born on 5 October 1936 in Prague. His family's assets were confiscated by the communists in 1948. Havel who was denied a formal education had to earn a degree at night school.

His political activism began in January 1977, when he co-authored the human rights manifesto Charter 77, which drew wide attention in the West. Havel first made a name for himself after the 1968 Soviet-led invasion that crushed the Prague Spring reforms of Alexander Dubcek. He wrote a series of underground essays that stand with the work of Soviet dissident Andrei Sakharov. Havel first came to international fame as a dissident playwright in the 1970s. The playwright turned political activist spent four-and-a-half years in prison for opposing Czechoslovakia's Communist government before emerging as a leader of the non-violent Velvet Revolution in 1989. During his presidency, Czechoslovakia broke up into Czech Republic and Slovakia in 1993. He was credited with laying the groundwork that brought his Czech Repub-

lic into the 27-nation European Union. Czech Republic became a member of the European Union in 2004. During his regime his country also joined NATO in 1999. Havel left office in 2003.



P. K. Iyengar

The former Chairman of the Atomic Energy Commission (AEC), P.K. Iyengar, 80, who passed away in Mumbai on Wednesday, was a great scientist and a role model to many people, according to AEC Chairman Srikumar Banerjee. He excited the minds of youngsters in several fields. Dr. Iyengar was Chairman, AEC, and Secretary, Department of Atomic Energy (DAE) from 1990-93. He was Director, Bhabha Atomic Research Centre (BARC), from 1984 to 1990. Prior to this, he headed the Physics group in BARC. Dr. Iyengar, who belonged to Tirunelveli district in Tamil Nadu, did his postgraduation in physics in 1952 from the University of Travancore and obtained his Ph.D. from the University of Bombay in 1963. He joined the Tata Institute of Fundamental Research (TIFR) of the DAE in 1952. He was deputed to Chalk River Laboratories of the Canadian Atomic Energy Establishment. He was trained in Canada under Dr. B.N. Brockhouse, a Nobel Laureate in Physics.

After he returned to India, Dr. Iyengar pioneered research in neutron phys-

ics and built an internationally recognised team in that field in the BARC. He led a team that indigenously designed and developed the PURNIMA reactor, which was commissioned in 1972. He made a significant contribution to the indigenous building of the Dhruva reactor, which attained criticality when he was Director, BARC. Dhruva continues to be a world-class facility even today, and Dr. Iyengar's contribution during the final stages of its commissioning was significant.

Starting his research in nuclear physics in the TIFR in 1952, Dr. Iyengar foresaw the advent of nuclear reactors and the opportunities they offered in both basic research and nuclear technology. He started building neutron spectrometers in 1958 around Apsara, Asia's first nuclear reactor, even before the high flux reactor CIRUS was operational, and gave India an early start in neutron beam research. He encouraged research and development in material science, radiation physics, molecular biology, lasers and accelerators. He was primarily responsible for the establishment of the Raja Ramanna Centre for Advanced Technology in Indore.

As AEC Chairman, Dr. Iyengar vigorously pursued the nuclear power programme with the commissioning of reactors at Narora in Uttar Pradesh and Kakrapar in Gujarat. He emphasised the importance of the development of the Fast Breeder Test Reactor at the After his retirement from the DAE, Dr. Iyengar held several positions. He received several awards, including Shanti Swarup Bhatnagar award and Padma Bhushan. He is survived by his wife, a son and a daughter.

Amichand Rajbansi

Charismatic and controversial South African Indian politician Amichand Rajbansi, 69, died in a hospital here on Thursday. He was admitted two months ago for a bronchial condition. He died just a fortnight short of his 70th birthday. Nicknamed "The Bengal Tiger" because of his fiery nature, Rajbansi courted political controversy throughout his career but remained popular with a section of the Indian community, which repeatedly voted him back into positions through his Minority Front party. Rajbansi and his wife, pharmacist Shameen Thakur, were the only two representatives of the party in the KwaZulu-Natal provincial legislature. Rajbansi claimed to have honed his political skills through working with leaders of the African National Congress (ANC) such as Albert Luthuli, Moses Mabhida and Nelson Mandela. In January 2009, Rajbansi received a Lifetime Achievement Award from the India International Friendship Society in New Delhi.

Ram Nath Singh

Poet Ram Nath Singh, popularly known as Adam Gondvi, breathed his last in Lucknow on 18 December 2011. Gondvi lived like a villager throughout his life and wrote revolutionary poetry focusing on the pathetic state of dalits and the poor. He himself died in poor financial condition and cultural and social activists had to appeal for donations for his treatment. Adam Gondvi was born on 22 October 1947 in Aataa Paraspur village of Gonda district in Uttar Pradesh. His couplet, Kaaju bhuni plate mein, whisky bhari gilaas mein, utra hai raamraaj vidhayak niwas mein was a great hit

among the masses. Gondvi also criticised politicians who sought votes on caste and communal basis in his gazal collections. His collection *Dharti ki satah par* and *Samay se Muthbhed* made him an acclaimed gazal writer. He was felicitated with Dushyant Kumar prize in 1998 by Madhya Pradesh government.

Socrates Brasileiro de Souza Viera de Oliveira

Brazil's former football captain, Socrates who led Brazil in two World Cups died of septic shock on 4 December 2011 in Sao Paulo. Socrates was also known as the Golden Hee and the Big Thin One. He was renowned as one of the great playmakers of his generation. Born on 19 February 1954, Socrates was part of a golden Brazilian generation who included midfielder Zico, Junior, Falcao and Eder.

Socrates Brasileiro de Souza Viera de Oliveira made his international debut in 1979 and captained Brazil at the 1982 and 1986 World Cups. However Brazil did not manage to win the cup under the captaincy of the former attacking midfielder. Socrates won 60 caps and scored 21 goals in his seven-year Brazil career. He had scored 25 goals in 63 games for Brazil. Socrates was also a cultural icon and a political activist who used his celebrity to fight for the end of Brazil's 1964-1984 military government. Socrates was a physician and had practiced medicine after retiring as a player in 1989.



Jacob E. Goldman

Jacob E. Goldman, a founder of the Palo Alto Research Center (PARC) that developed breakthrough computing innovations died on 20 December 2011. The Palo Alto Research Center developed computing innovations such as the graphical user interface and ethernet networks. Physicist Jacob E. Goldman, as Xerox's chief scientist founded the company's vaunted Palo Alto Research Center, which invented the modern personal computer. In 1970s, the laboratory created a string of innovations from laser printing to object-oriented programming to the world's first WYSIWYG (What-You-See-Is-What-You-Get) editor. Goldman played an important role both at the Ford Motor Co., during the 1950s, and later at Xerox in the 1960s and 1970s, in financing basic scientific research in an effort to spark corporate innovation. He became a private investor after retirement, according to the book *Dealers of Lightning: Xerox PARC and the Dawn of the Computer Age* by Michael Hiltzik.

Mario Miranda

The world renowned cartoonist, Mario Miranda died in Goa on 11 December 2011. He was 85. He famously captured vignettes of Goan life on canvas in his trademark style for over two decades. Miranda was the recipient of the Padma Bhushan

(2002) and Padma Shri (1988) awards. He started his career as a cartoonist for the Times of India Group in 1953 and later moved into illustration and fine art. His creations such as Miss Nimbupani and Miss Fonseca which appeared on a regular basis in Femina, Economic Times, and The Illustrated Weekly of India brought him fame. In his stint with the Times of India, Miranda worked with the noted cartoonist, R.K. Laxman. Miranda's own books are *Goa with Love*, *A little World of Humor*, *Sketch book*, *Germany in Wintertime*, *Impression of Paris* and *Mario de Miranda*.

Vasant Ranjane

Former Indian Test (medium-pace) cricketer Vasant Ranjane passed away in Pune on 22 December 2011. Born in Pune on 22 July 1937, Ranjane grabbed 19 wickets in Tests at 34.15 per innings and 175 wickets from 64 first class ties. Ranjane thus made a successful first-class debut in 1956-57, when he took 9 for 35 and 4 for 36 for Maharashtra against Saurashtra. Ranjane played seven Tests for India between 1958 and 1964 and represented Maharashtra and Railways in first-class cricket from 1956 to 1971. He made his Test debut against West Indies in 1958-59. Next he was chosen for his second game in 1961-62, when England toured India. He played two more Tests in that series and was taken on the 1962 tour of West Indies, where he played one game, the final Test at Kingston. He played two more Tests, against England in Madras in 1963-64 and against Australia at the same venue a year later and finished with 19 Test wickets at an average of 34. Ranjane worked for Indian Railways as a fit-

ter and retired in 1994.

George Whitman

George Whitman, the American-born owner of Shakespeare & Company, a famed English-language bookstore on the Left Bank in Paris died in Paris on 14 December 2011. His bookstore served as a magnet for writers, poets and tourists for close to 60 years. Born in East Orange, New Jersey, United States he was awarded the Officier des Arts et Lettres medal by the French government for his contribution to the arts over the previous fifty years.

Hamilton Bobby

Former Indian footballer Hamilton Bobby passed away following a cardiac arrest on 17 December 2011. Bobby, an assistant manager of Indian Bank who fell unconscious at his place of work could not be saved though he was immediately rushed to the hospital. He had twice captained Tamil Nadu in the Santosh Trophy and also represented the state for seven years from 1993 to 2000. The footballer had also played in the under-16 and under-23 national teams and was a member of the senior India national team at President's Cup in Colombo.



Satyadev Dubey

Theatre director, screenplay writer and actor Satyadev Dubey, credited with introducing existential and absurd theatre, passed away on 25

December 2011. Dubey was a maverick who went on to become a theatre guru. Born in Bilaspur, Chhattisgarh, in 1936, Dubey's first ambition was to become a cricketer. However after coming to Mumbai, he gave up the idea of becoming a cricketer. Dubey came into prominence with Dharamvir Bharati's radio-play Andha Yug that brought to the fore the pervasive criminal and homicidal tendencies during the times of war. He penned down the screenplay for Shyam Benegal's film Bhumika as well. He penned screenplays/dialogue of some acclaimed films in the 1970s, including Shyam Benegal's Nishant, Ankur, Kalyug and Bhumika, and also acquired a distinct identity as theatre director-teacher. He won the Filmfare Award for Best Dialogue in 1980 for the film Junoon. He also won the Silver Lotus Award in 1978 for Best Screenplay for the film Bhimika. He shared this award with Shyam Benegal and Girish Karnad.

KV Varadaraj

KV Varadaraj, one of the few Indian footballers who played in two Olympics in 1948 and 1952, passed away in Bangalore on 20 December 2011. Varadaraj was nicknamed 6-footer by the English. Born on 7 May 1924, Varadaraj came up quickly through the ranks representing Challenge Union Mysore, Mysore Railways and Bangalore Blues.

Varadaraj was the goalkeeper of the Indian team led by Mohun Bagan defender Talimeren Ao that took the field in the 1948 London Games. Despite Varadaraj also known as Mysore Wall guarding the goal, India lost to France 1-2 in the first round. Varadaraj won the gold medal

at the 1951 inaugural Asian Games in New Delhi as he helped India keep a clean slate in all the matches, beating Iran 1-0 in the final. Later he also worked as a coach for the HMT.

Varadaraj was one among the several Olympians to have emerged from Karnataka, then known as Mysore. Among his illustrious contemporaries were T Shanmugam, BN Vajravelu, Ahmed Khan, SA Basheer and S Raman.

Accused/Resigned

Jacques Chirac

A French court sentenced former French President Jacques Chirac to a two-year suspended jail term following his conviction on graft charges. He was held guilty for misappropriation of public funds and embezzlement. This is the first time a French Head of State has been convicted since the trial in 1945 of Marshal Philippe Petain who collaborated with the Nazis. He is the first former or serving president of modern France to be tried, although Nazi-era collaborationist leader Philippe Petain was convicted of treason and King Louis XVI was sent to the guillotine by revolutionaries in 1793. Chirac who suffers from neurological problems and is in poor health was not present in the courtroom. served two consecutive terms as President from 1995 to 2007.

Chirac's crimes date back to the 1990s when, as Mayor of Paris, he placed several of his party men and women on the public payroll in what has been described as phantom jobs. Chirac's criminal conduct had cost Paris taxpayers the equivalent of 1.4 million euros (\$1.8 million). He breached the duty of trust that

weighs on public officials charged with caring for public funds or property, in contempt of the general interest of Parisians.



Ogyen Trinley Dorje

The 17th Karmapa Ogyen Trinley Dorje was named in a chargesheet filed by the police in a Himachal Pradesh court on the seizure of foreign currency worth Rs.70 million from a monastery in January.

Ilker Basbug

Turkey's former Army chief Ilker Basbug was arrested on 6 January 2012 over an alleged attempt on part of the chief to topple the Islamist-rooted government in the country. Ilker Basbug, the 26th chief of staff of the Turkish republic was placed in preventive detention for setting up and leading a terrorist group and of attempting to overthrow the government. General Basbug, who served as Army chief from 2008 to 2010, was sent to a prison at Istanbul's Silivri prison. Basbug is the first such high-ranking military commander to be arrested as a suspect since a former chief of staff in the 1960s.

Rod Blagojevich

Former Illinois Governor Rod Blagojevich was sentenced to 14 years in federal prison on 7 December 2011. He was arrested and charged with a wide-ranging corruption spree that included trying to

auction off President Barack Obama's vacated Senate seat. Blagojevich, a onetime rising star in the Democratic Party whose public defense strategy included stints on reality TV, a media tour and a book. He was convicted over the course of two trials on 18 counts of corruption. His crimes included lying to the FBI, attempting to shake down a children's hospital for campaign contributions and seeking to secure campaign funds, a cabinet post or an endowment for a new foundation in exchange for the Senate seat vacated by Obama. Under federal guidelines, he is to serve 85% of his sentence, or around 12 years.

Honour



'Time' Person of the Year

The Protester was named Time magazine's 2011 Person of the Year on 14 December 2011. Time defines the Person of the Year as someone who, for better or for worse, influent that individual action can bring collective, colossal change. 2011 witnessed unprecedented rise in both peaceful and sometimes violent unrest and dissent from the Arab Spring to the Occupy Wall Street movement. People across the globe in Tunisia, in Egypt, in Libya dissented and demanded even when they were answered with tear gas or a hail of bullets. The Mideast was the centerpiece of the year's protests.

US Special Operations Command and overall commander of the secret US mission into Pakistan in May 2011 that killed Osama bin Laden, came in at second place on the Time list. Chinese dissident artist Ai Weiwei came in at No 3. Rep. Paul Ryan, who put forth a plan to tackle America's burgeoning national debt stood fourth. Britain's Duchess of Cambridge, Kate Middleton, who married Prince William finished fifth. In 2010, Facebook founder and CEO Mark Zuckerberg got named the Person of the Year.

Time Magazine mentioned that Turkish Prime Minister Recep Tayyip Erdogan was the People's Choice for the Person of the Year. In an online poll, Erdogan received 123000 votes nominating him as the most influential person of the year significantly more than any other nominee.



Hema Malini

Veteran Bollywood actress Hema Malini was named the person of the year by People for the Ethical Treatment of Animals (PETA). PETA named her the Person of the Year for raising her voice to oppose cruelty to animals and her staunch commitment to a vegetarian diet. The Dream Girl on behalf of PETA had recently appealed to the minister of Environment and Forests to take immediate steps to end the cruel tradition of jallikattu. Jallikattu is a sport event in Tamil Nadu in which terrified bulls are kicked, punched,

jumped on, dragged to the ground and otherwise tormented. In response to her plea, the Ministry issued a notification in The Gazette of India stating that bulls could no longer be used as performing animals.



Udaipur

Readers of international travel magazine Condé Nast Traveller voted the lake city of Udaipur in Rajasthan as the best leisure destination in India. Rajasthan State Tourism Minister Bina Kak received the Condé Nast Traveller India Award-2011 from Union Tourism Minister Subodh Kant Sahay in New Delhi on 3-4 December 2011 weekend. The award opened up Rajasthan's tourism sector to the globetrotters and package tour operators in a big way. Condé Nast Traveller is one of the world's most renowned travel magazines. Its readers vote for various categories of destinations, accommodations and transport every year.

Alastair Cook

England batsman Alastair Cook on 6 December 2011 received Member of the Order of the British Empire (MBE) medal from Britain's Queen Elizabeth II at Buckingham Palace. The left-handed opener's prolific form in Australia during the 2010/11 Ashes series helped England to a 3-1 series win - their first Test campaign triumph Down Under in 24 years. Cook scored a mammoth 766 runs in the series to play a major part in that series win. Then series win

helped propel England to the top of the Test rankings. Cook began his Test career with a second-innings century in Nagpur, India, in March 2006. He has till date made 19 Test tons in all. In the second innings of the first Ashes Test in November 2010, Cook made 235 not out. He then scored 148 in the second Test, 82 in the fourth and 189 in the fifth and final Ashes encounter in Sydney.

Dam999

Controversial film, Dam999 directed by Sohan Roy made it to a shortlist for the Oscars under the Best Picture category. The film, based on a catastrophe caused by a 100-year-old dam in India giving way, is among the 265 films in contention for the Best Picture. Tamil Nadu government imposed a ban citing that it may cause animosity between Kerala and TN people as the film was dealing with the subject of the 116-year-old Mullaperiyar dam on the Kerala-TN border. The film also fulfilled other criteria of being exhibited theatrically on 35 mm, 70 mm or in digital format and having a running time of over 40 minutes. Three of the songs from Dam999, The film's songs - Dam 999 (Theme song), Dakkanga Dugu Dugu and Mujhe Chodke were among the 39 songs shortlisted under the Best Original Song category. All three songs were written by Roy himself, and set to tune by Ousephachan. National award winner Hariharan lent his voice to the Hindi song Mujhe Chod Ke.

Under 30 Achievers

The Forbes' 30 under 30 list was prepared by selecting young turks from 12 diverse fields including energy, finance, media, law, entertainment, science, design and technology.

Facebook's Mark Zuckerberg, human rights activist Ronan Farrow and pop stars Lady Gaga and Justin Bieber are also included in Forbes magazine's list of top-achieving people under age 30. The list released in December 2011 included 10 people of Indian origin.

Among the Indian-origin people on the list is 17 year old Param Jaggi, a student and inventor at Austin College. Jaggi created algae-filled device that fits over a car's tailpipe and turns carbon dioxide into oxygen. Vivek Nair, Chief Executive of Damascus Fortune, who is developing a technology that transforms industrial carbon emissions into carbon nanotubes was also named in the list. Manvir Nijhar, Co-Head of European Equity Derivatives Sales at Citigroup was named as well. Kunal Shah, the youngest Managing Director at Goldman Sachs was also included in the list. Making a mark in the field of science was Raj Krishnan, Chief Executive of Biological Dynamics who is developing blood tests that use electric fields to detect key signals that a patient has cancer from the blood. Sidhant Gupta, a graduate student at the University of Washington who has been listed as well, is developing new sensors and software for the home that conserve electricity, heat and gas.

Accidents

Sukhoi Su-30 MKI Fighter Aircraft Crashed

A Sukhoi Su-30 MKI fighter aircraft from the Lohegaon Air Force Station crashed on 13 December 2011 at a place near Wadebholai, 25 km away from the Pune city. The accident was explained as a mechanical failure.

The plane lost contact with its base's Air Traffic Control. A Court of Inquiry was ordered into the incident. However, no casualties took place due to the accident. It was a routine training sortie. The Sukhoi belonged to the No 20 'Lightening' squadron and was the 8th IAF plane to crash in 2011. The IAF lost 30 fighter aircraft's, of which 10 were lost from 2009 to 2011.

Commyty/Commission/ Conference

Conference on Autism

Non-government organisation Association for Behaviour Analysis (ABA-India) organised the 2nd ABA-India conference Autism: From Early Childhood to Adulthood Successful Data Based Intervention at India Habitat Centre, New Delhi on 17 and 18 December 2011. Association for Behaviour Analysis is working on increasing the limited resource pool of behaviour analysts and educating parents of children with autism. The conference is focussed on the child with autism and successful evidence based interventions for these children. Besides the keynote speakers and presentations, papers were also be presented by parents teaching their children using ABA principles. The conference offered a first one of a kind learning opportunity. ABA-India is an affiliate chapter of ABA International, U.S., and is pioneering the introduction of ABA in India. ABA is a subject dealing with the scientific study of human behaviour and its applications in various fields, including mental health, developmental disabilities, child development and education. ABA methods are used to shape behaviour for bringing positive changes in society.

The Bonn Conference

The Global Conference on Afghanistan's future concluded here. Bonn is the capital of Germany. The one-day global conference in Bonn on Afghanistan's future ended on 5 December 2011. During the summit, Afghanistan pledged to intensify the drive against corruption in exchange for international support after NATO forces withdraw in 2014. About 1000 delegates from 100 countries and international organisations participated in the organisation. Pakistan didn't attend the Bonn summit. First Bonn summit was held in 2001.

Meeting on Citizen Engagement through Social Media Communications and IT Minister Kapil Sibal on 15 December 2011 sought help from social networking websites and Internet companies in propagating government's various e-governance initiatives. The objective is to make people more aware of the online environment. Sibal chaired a meeting Citizen engagement and use of social media attended by functionaries of all leading Internet companies including Google, Facebook and Twitter besides other stakeholders. The meeting was organised on 15 December to discuss how the social media could empower the government, since under the normal processes of governance only limited dialogue with the representatives of society is possible. The Internet companies were asked to give their opinions on how to use social media and e-governance to empower citizens. The objective of using the internet to improve citizen engagement in policy formulation and implementation of its projects and programmes was highlighted.

Committee to increase the Productivity of Agriculture Sector

President Pratibha Devisingh Patil constituted a 12-member committee to study and recommend measures for increasing productivity, profitability and sustainability of the agriculture sector in India. The committee will work under the Chairmanship of Governor of Punjab and Rajasthan, Shivraj Patil. The committee will deliberate on the need for formulating requisite policy initiatives and legislative measures and prospects for investment in the agriculture and allied sectors among others. The Committee will also discuss on measures for transfer of innovations and cutting-edge technologies to the farm and allied sectors.

Various

People's National Party won in Jamaica

Jamaica's main opposition party has won the country's parliamentary elections, while the ruling Jamaica Labour Party conceded defeat. Jamaica is an island nation. It is situated in the Caribbean Sea. Preliminary results showed that with 50 percent of the votes counted, the opposition People's National Party is expected to win 42 out of the total 63 parliamentary seats.

ECU to deal with Black Money issue in IBSA Countries

The Indian government in December 2011 set up an electronic centre unit in the Finance Ministry to deal with the unaccounted money issue in IBSA countries- India, Brazil and South Africa. The new unit is to deal with governments in exchanging information on tax-evaders and black

money in IBSA nations. The government received information from 10 countries on the issue. The IBSA electronic centre unit is aimed at tackling the black money menace in the IBSA nations. The information is currently being disseminated by various government agencies. Prosecution has also been launched in 17 cases pertaining to LTG bank in Germany. The unit, in close association with the revenue intelligence agencies of other countries, will identify and share information on tax evaders, abusive tax schemes as well as of the people who are involved in promotion of such activities. Abusive tax schemes are transactions designed to reduce or defer taxation. India has Double Taxation Avoidance Agreements (DTAAs) is currently in place with Brazil and South Africa. Representatives of all the countries are to have an exchange of information and hold regular meetings in the three countries by rotation to work out a joint strategy on how to tackle this growing menace of stashing funds abroad and prevent ways of tax evasion.

EMB-145I Aircraft

The first fully modified aircraft, EMB-145I for the indigenously developed Indian Airborne Early Warning and Control System (AEW&C) undertook its maiden flight from Sao Jose dos Campos in Brazil on 6 December 2011. The modified Embraer aircraft undertook its maiden flight with about 1000 Mission System Components provided by the Centre for Airborne Systems (CABS) of the Defence Research Development Organisation (DRDO). The components include the critical item – AESA (Active Electronic Scanning Antenna) Radar Antenna developed by DRDO

and certified from ANAC, International FAR Certification Agency. The indigenous system, AEW&C estimated to cost around Rs 1800 crore would detect, identify and classify threats present in the surveillance area and act as a command and control centre to support air operations, according to DRDO officials. The systems for the EMB-145I aircraft is currently being developed by Bangalore-based Centre for Air Borne Systems (CABS), a Defence Research and Development Organisation (DRDO) facility. The inclusion of this aircraft will enable India to join the league of countries capable of developing and delivering such complex Airborne System of Systems to its user.

World's First Test Tube Eld's Deer
The first Eld's deer was born via in vitro fertilization in Thailand. The researchers at the Smithsonian Conservation Biology Institute (SCBI) collected eggs, inseminated in vitro with thawed semen to produce embryos and transferred the embryos to a surrogate mother. As a result, a fawn was born on 17 October 2011 at the Khao Kheow Open Zoo in Thailand. The Smithsonian Conservation Biology Institute plays a key role in the Smithsonian's global efforts to conserve species and train future generations of conservationists. Eld's Deer is also known as the Thamin or Brow-antlered Deer. It is an endangered species of deer indigenous to southeastern Asia.

Sibsagar

The country's first cooperative university will be set up at Sibsaagar in Assam. To be known as the Rajiv Gandhi University of Cooperative Management, it will offer courses on

cooperative management and train existing manpower in both the government and the private sectors, to manage the cooperative sector.

Deadline for Social Networking
A Delhi court set 6 February as a deadline for 22 social networking sites including the Facebook, the Google, the Yahoo and the Microsoft to remove all anti-religious or anti-social content. The court directed the social networking sites to file compliance reports by 6 February 2012. Additional Civil Judge Mukesh Kumar had on 20 December in a ex-parte order issued summons to the social networking websites, granted around one and half month for compliance of his order. The court after going through the several printouts of the objectionable contents, CD and other documents had found them defamatory and derogatory and ordered to take them off from the sites. The social networking sites were issued summons by the court, on grounds of carrying objectionable content. The companies were charged with section 292 (sale of obscene books etc), 293 (sale of obscene objects to young person etc) and 120-B (criminal conspiracy) of the IPC.

Ahmedabad

In an exclusive opinion poll conducted for The Times of India, Ahmedabad emerged as the best among India's mega-cities, edging out Pune, Mumbai and Delhi. This finding was done by an exclusive opinion poll conducted for The Times of India by leading market research firm, IMRB. The survey was on quality of life in India. Ahmedabad bagged the national award on 13 December 2011, in the category of

Best City in the Implementation of Basic Services to Urban Poor (BSUP) under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) scheme.



Indira Bhavan

The West Bengal Government on 28 December 2011 declared its decision to take over Indira Bhavan, which was the official residence of former Chief Minister Jyoti Basu at Salt Lake. West Bengal CM Mamata Banerjee declared that Indira Bhavan would be turned into a museum and a research centre devoted to Kavi Nazrul Islam, a contemporary of Rabindranath Tagore. After the death of Jyoti Basu in 2010, the previous government (CPIM) had mulled many options including converting it into a government guest house. The decision to convert Indira Bhavan into Nazrul Bhavan was taken in public interest and to promote research work on the great rebel poet. The Nazrul Bhavan would house a research centre and museum on the great rebel poet who made a memorable contribution to the country's freedom movement. The building will house primarily the poet's memorabilia, his books and research on the poet's works. The bungalow was named Indira Bhavan during the Congress Session in 1972 when the then Prime Minister Indira Gandhi stayed there for the duration of the session. Indira Bhavan was built in 1972 primarily to serve as a guest house for then Prime Minister Indira Gandhi for her visits to the city.

The Left Front government later decided to allot Indira Bhavan for Basu to live in and he had moved into the bungalow in August 1989. Since then, he continued to live there till his death in 2010.

Malappuram (Kerala) Off-campus of the AMU

Union Minister for Human Resource Development Kapil Sibal dedicated the Malappuram (Kerala) off-campus of the Aligarh Muslim University (AMU) to the nation at a function held in Perinthalmanna on 24 December 2011.

The Aligarh Muslim University special centre in Malappuram is one of the five such centres being set up in the country. The new campus will house five hostels for men and three women hostels. The construction also includes an administrative block, two academic blocks and 20-odd staff quarters. The Union government sanctioned Rs 200cr for the AMU campus which is expected to be ready in five years. It will have facilities from pre-school to a full-fledged medical college. The state government will spend Rs 100cr on the development of the campus.

India 3rd Amongst the Largest Purchasers of US Arms

According to the Defence Security Cooperation Agency (DSCA) report, India emerged as the third largest purchaser of US arms with contracts worth \$4.5 billion in the year ended 30 September 2011 as US weapons sales rose to \$34.8 billion in fiscal 2011. Defence Security Cooperation Agency is the Pentagon agency that oversees foreign arms sales. Even though the US firms lost the bid for an estimated USD 10 billion contract for sale of 126 jets to Indian Air Force

(IAF), India was listed as the third largest purchaser of US arms through the government to government channel Foreign Military Sales (FMS). American arms sales to India include Naval Reconnaissance planes, giant transporters, sea-skimming missiles and other weapon systems. According to the report government-to-government foreign military sales totalled \$28.3 billion in fiscal 2011, while other sales managed by various government agencies reached \$6.5 billion. The Pentagon had projected government-to-government sales would reach \$36.3 billion for the year ending 30 September 2011. Topping the list for the fiscal year 2011 ending 30 September 2011 were- the Afghan Security Forces (\$5.4 billion); Taiwan (US \$4.9 billion); India (\$4.5 billion); Australia (\$3.9 billion); Saudi Arabia (\$3.5 billion); Iraq (\$2.0 billion); the United Arab Emirates (\$1.5 billion); Israel (\$1.4 billion); Japan (\$0.5 billion); and Sweden (\$0.5 billion).

Green Film Festival

Green Film Festival was held in Delhi from 6 December to 10 December 2011. Leading environment and wildlife films from across the world were screened as part of the CMS Vatavaran film festival. Biodiversity Conservation was the theme of the festival. A total of 114 films were screened, taking viewers into the diverse geographical realms of planet Earth through the lens of the finest environment and wildlife filmmakers. It was a summit for Asian film-makers, special programmes for children throughout the event and discussions on the environment with more than 50 speakers and 300 delegates from 15 different countries.

It held an award ceremony for young environment journalists and film-makers also.

Six Agrochemical Multinational Corporations

A panel of jurors of the Permanent People's Tribunal, an international opinion tribunal, presented its findings following three days of depositions by citizens from around the world. The findings of the panel indicted parent states of six agrochemical multinational corporations, host countries such as India, and international bodies (such as the United Nations, Food and Agricultural Organisation and the World Trade Organisation). The panel highlighted that the failure of states to regulate, monitor and discipline the activities of the companies made culpable along with the host states. Witnesses from around the world had testified in the four-day Permanent People's Tribunal regarding the health impact, human rights violations and unethical practices by six transnational corporations — Bayer, BASF, Dupont, Monsanto, Syngenta and Dow Chemical.

German economist Elmar Altvater presented the facets of the findings and also mentioned on the occasion that economic liberalisation, deregulation and privatisation of formerly public goods have led to human rights violations and unethical practices by six transnational corporations. The conclusion drawn maintained that transnational have not been responsible in their pursuit of higher profits, and for this people have had to pay a hefty price.

Books

Nahjul Balagha

Iran's former Foreign Minister Ali Akbar Wilayati on 21 December 2011 released a 1000-year-old manuscript, Nahjul Balagha believed to be a collection of letters, speeches and aphorisms of the fourth Caliphate of Islam Hazrat Ali at Aligarh Muslim University. The manuscript was released for publication at Aligarh Muslim University. The Urdu, Hindi and English versions of this rare manuscript is to be published by the AMU with financial support of the Iran Government. Bahr-e-Zakhkhar, another book believed to contain a rare collection of Tazkira (a sort of biography mostly in the form of poetry) in Persian was also released. AMU's Maulana Azad Library was also gifted 3000 Persian manuscripts and CDs by the Iran Cultural House.

Izhar-e-Khayal

Vice President and Rajya Sabha Chairman M Hamid Ansari released two books Expression of Thoughts (English) and Izhar-e-Khayal (Urdu) authored by K. Rahman Khan, Deputy Chairman of Rajya Sabha in New Delhi on 19 December 2011. The books in English and Urdu are compilation of his selected speeches on various subjects like Parliament, democracy and governance, economy and business, besides issues of equity, justice and secularism, women empowerment and development. The books - Expression of Thoughts and Izhar-e-Khayal were released in the presence of Lok Sabha Speaker Meira Kumar and Leader of Opposition in Rajya Sabha Arun Jaitley. Former Lok Sabha Speaker Somnath Chatterjee

wrote the foreword to the English version of the book, while Hazrat Maulana Rabe Hasan Nadwi Sahab has written for the Urdu version. On the occasion, the Vice President highlighted Khan's seminal contribution to the field of education and minority uplifting especially matters pertaining to Wakf. The Wakf Committee Report presented under his Chairmanship was a remarkable piece of diligent work.



Non-Stop India

The book Non-Stop India by journalist-author Mark Tully was launched in Chennai by Editor-in-Chief of The Hindu, N Ram on 13 December 2011. The book was published jointly by Penguin Books India and Madras Book Club. Tully, who also authored No Full Stops in India mentioned on the occasion of the launch that he had extensively covered India over the last 20 years. The book talked of the visit of the writer who has travelled across the length and breadth of the country which include visiting Maoists-hit areas, problems faced by Dalits. The book had also mentioned about the growth of Tata Group and its Chairman Ratan Tata. Mark Tully cautioned in his book that excessive secularism was a danger to a country like India and added that both secularism and communalism were used as political weapons. The Official Journey to Makkah Opus A book titled The Official Journey to

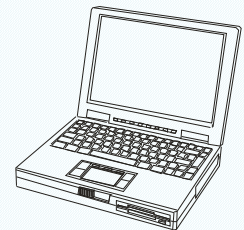
Makkah Opus was unveiled on 14 December 2011 by Prince Turki Bin Faisal Al Saud of Saudi Arab at pre-launch function in New Delhi. The book is scheduled to be formally launched in 2012. Prince Turki Bin Faisal Al Saud is a member of the Saudi royal family and founder of the King Faisal Centre for Research and Islamic Studies, which has provided active support and advice for the publication of the Makkah Opus. The book is bound by hand in the finest leather and contained in a silk covered clamshell case.

The book is being published by the Opus Media Group, luxury publisher of premium large format books. The India edition, priced at a whopping \$40000-50000, would be limited to 100 copies and will be exhibited in different cities of the country in March 2012.

The book has been described as a compendium of finest scholarly writing, and both historical and specially commissioned art and photography. It is believed to faithfully represent the incredible journey of Hajj pilgrimage world-over. The book is a limited edition volume which contains 100000 words both in Arabic and English with the support of 2000 photographs, most of which have been specially commissioned. A striking feature of the book is the two meters long gatefold pictures. The book has also been compiled with a view to make it an educational tool for those who follow and are interested in the Islamic faith. The book includes interviews, profile, photography and features, including contributions from eminent Islamic scholars and Islamic VVIPs across the world.

Useful Links

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GENERAL ABILITY TEST

SYNONYMS

Directions (Q. No. 1 to 15): Each of the following 15 items consists of a word in capital letters, followed by four words. Select the word that is most similar in meaning to the word written in capital letters.

- | | | |
|-----------------|----------------|-------------------|
| 1. INSPIRE | (a) Compel | (b) Persuade |
| | (c) Infuse | (d) Encourage |
| 2. PROSCRIBE | (a) Recommend | (b) Allow |
| | (c) Advance | (d) Banish |
| 3. ABBREVIATE | (a) Shorten | (b) Enlarge |
| | (c) Decrease | (d) Change |
| 4. MULL | (a) Recommend | (b) Think |
| | (c) Punish | (d) Provoke |
| 5. VINDICTIVE | (a) Strategic | (b) Triumphant |
| | (c) Revengeful | (d) Demonstrative |
| 6. SURFEIT | (a) Sate | (b) Pass |
| | (c) Confiscate | (d) Delegate |
| 7. ZANY | (a) Magician | (b) Pet |
| | (c) Thief | (d) Clown |
| 8. REGALE | (a) Harass | (b) Entertain |
| | (c) Express | (d) Suppress |
| 9. APPURTENANCE | (a) Privilege | (b) Journey |
| | (c) Concept | (d) Necessity |
| 10. SYCOPHANT | (a) Suppliant | (b) Follower |
| | (c) Flatterer | (d) Admirer |
| 11. PERNICKETY | (a) Spiteful | (b) Careless |
| | (c) Fussy | (d) Ignorant |
| 12. QUAIN | (a) Old | (b) Quiet |
| | (c) Haunted | (d) Unusual |
| 13. INVIDIOUS | (a) Irritable | (b) Harsh |
| | (c) Sinful | (d) Unpopular |
| 14. PUNCTILIOUS | (a) Stupid | (b) Wasteful |
| | (c) Meticulous | (d) Timid |
| 15. IMPOSTURE | | |

- | | |
|-----------------|---------------|
| (a) Claim | (b) Status |
| (c) Destruction | (d) Deception |

ANTONYMS

Directions (Q. No. 16 to 30) Each of the following 15 items consists of a word in capital letters, followed by four words. Select the word which is closest to the opposite in meaning of the word written in capital letters.

- | | |
|-----------------|----------------|
| 16. BRIDGE | |
| (a) Divide | (b) Blind |
| (c) Release | (d) Open |
| 17. PLATONIC | |
| (a) Lunatic | (b) Sublime |
| (c) Major | (d) Sensual |
| 18. NADIR | |
| (a) Progress | (b) Liberty |
| (c) Zenith | (d) Modernity |
| 19. AVOIDANCE | |
| (a) Possession | (b) Passion |
| (c) Pursuit | (d) Power |
| 20. COMPLY | |
| (a) Refuse | (b) Agree |
| (c) Disobey | (d) Deny |
| 21. STRINGENT | |
| (a) Magnanimous | (b) Lenient |
| (c) Vehement | (d) General |
| 22. MITIGATE | |
| (a) Stagnate | (b) Suffer |
| (c) Aggravate | (d) Instigate |
| 23. GOBLIN | |
| (a) Angel | (b) Hermit |
| (c) Traveller | (d) Pilot |
| 24. LISSOME | |
| (a) Ungainly | (b) Huge |
| (c) Pungent | (d) Crud |
| 25. SPURIOUS | |
| (a) False | (b) Genuine |
| (c) Simple | (d) Systematic |
| 26. ZOOM | |
| (a) Soothe | (b) Plurmet |
| (c) Subjugate | (d) Recite |

27. TANGIBLE

- | | |
|-------------|-------------|
| (a) Gentle | (b) Eluive |
| (c) Refined | (d) Pabable |

28. REPRIMAND

- | | |
|---------------|----------------|
| (a) Reward | (b) Appreciate |
| (c) Encourage | (d) Praise |

29. SMOTHER

- | | |
|-------------|--------------|
| (a) Repress | (b) Cheer |
| (c) Nurture | (d) Irritate |

30. BOISTEROUS

- | | |
|------------|----------------|
| (a) Serene | (b) Tumultuous |
| (c) Brazen | (d) Opaque |

COMPREHENSION

Directions: This section you have four short passages. After each passage you will find several questions based on the passage. -First, read passage-I and answer the questions based on it. Then go on to the other passages.

Examples 'I' and 'J' have been solved for you.

Passage

I our approach to life, be it pragmatic or other wise, a basic fact that confronts us squarely and unmatchable is the desire for peace, security and happiness. Different forms of life at different levels of existence make up the teeming denizens of this earth of out And, no matter whether they belong to the higher groups such as human beings or to the lower group such as animals, all beings primarily seek peace, comfort and security. Life is as dear to a mute craturas it is to a man. Even the lowliest insect strives for protection against dangers that threaten its life. Justs each one of us wants to live and not to die, so do all other creatures.

- I. The author's main point is that
(a) different forms of life are found on earth

- (b) differed levels of existence are possible in nature
- (c) peace and security are the chief goals of all living beings
- (d) even the weakest creature struggles to preserve its life

J. Which one of the following assumptions or steps is essential in developing the author's position ?

- (a) All forms of life have a single overriding goal
- (b) The will to survive of a creature is identified with a desire for peace
- (c) All beings are divided into higher and lower groups
- (d) A parallel is drawn between happiness and life, and pain and death

Explanation

I. The idea which represents the author's main point is 'peace and security are the chief goals of all living beings', which is response (c). So (c) is the correct answer.

J. The best assumption underlying the passage is 'The will to survive of a creature is identified with a desire for peace, which is response (b). So (b) is the correct answer.

Passage – I

That artificial intelligence quotient should seek to replace the time-tested I.Q. as a measure of mental ability is perfectly in consonance with the present day standards in a plastic society. However, the battle over grey cells whether in human or mechanical minds, whose latest round has found Uncle Sam shedding crocodile tears over Japan's failure to deliver on its promise to produce a fifth generation computer, may find the Asian Tiger Cubs-The under-35 Japanese

researchers-having the last laugh. For, though all the boastful Tokyo talk a decade ago to build 1,000 processor computers to process knowledge-and not merely numbers which is all the Silicon Valley Chips supposedly do-has remained just talk, the 180 young scientists in the 10-year venture have nevertheless made the big brains at Silicon Valley look rather silly with their product which has a yen for logical programming. The jubilation in the Valley may turn to depression when the inexorable logic of this development pulls down Washington from its pedestal of supercomputer supremacy.

31. Asian Tiger Cubs are
 - (a) young Japanese researchers
 - (b) mechanical minds
 - (c) the big brains at Silicon Valley
 - (d) fifth generation computers
32. Uncle Sam reacts to their failure with
 - (a) sorrow
 - (b) depression
 - (c) jubilation
 - (d) insincere sorrow
33. What have the cubs failed to produce ?
 - (a) Numbers processing computer
 - (b) Grey cells
 - (c) The fifth generation computer
 - (d) A plastic society
34. What have they succeeded in producing ?
 - (a) Grey cells
 - (b) A fifth generation computer
 - (c) A knowledge processing computer
 - (d) A product which has a yen for logical programming
35. How is their success likely to affect Washington's supremacy ?
 - (a) It is likely to make it look silly
 - (b) It is likely to dislodge it

- (c) It is likely to have the last laugh
- (d) It is likely to produce jubilation in the Valley

Passage – II

It is to progress in the human sciences that we must look to undo the evils which have resulted from a knowledge of the physical world hastily and superficially acquired by populations unconscious of the changes in themselves that the new knowledge has made imperative. The road to a happier world than any known in the past lies open before us if atavistic destructive passions can be kept in leash while the necessary adaptations are made. Fears are inevitable in our time, but hopes are equally rational and for more likely to bear good fruit. We must learn to think rather less of the dangers to be avoided, than of the good that will lie within our grasp if we can believe in it and let it dominate our thoughts. Science, whatever unpleasant consequences it may have by the way, is in its very nature a liberator, a liberator of bondage to physical nature and en to come, a liberator from the weight of destructive passions. We are on the threshold of utter disaster or unprecedentedly glorious achievement. No. previous age has been fraught with problems so momentous; and it is to science that we must look to for a happy future.

36. What does science liberate us from ?
It liberates us from
- (a) bondage to physical nature
 - (b) fears and destructive passions
 - (c) idealistic hopes of a glorious future
 - (d) slavery to physical nature and from passions

37. To carve out a bright future a man should
- (a) try to avoid dangers
 - (b) overcome fears and dangers
 - (c) cultivate a positive outlook
 - (d) analyse dangers that lie ahead
38. If man's bestial yearning is controlled
- (a) the present will be brighter than the future
 - (b) the present will become tolerant
 - (c) the future will be brighter than the present
 - (d) the future will be tolerant
39. Pears and hopes, according to the author
- (a) can yield good results
 - (b) can bear fruit
 - (c) are irrational
 - (d) are closely linked with the life of modern man
40. Should human sciences be developed because they will :
- (a) eliminate the destruction caused by a superficial knowledge of the physical world
 - (b) make us conscious of the changes in ourselves
 - (c) make us conscious of the changing world
 - (d) provide more knowledge of the physical world

Passage – III

As heart disease continues to be the number one killer in the United States, researchers have become increasingly interested in identifying the potential risk factors that trigger heart attacks. High-fat diets and "life in the fast lane" have long been known to contribute to the high incidence of heart failure. But according to new studies, the list of risk factors may be significantly longer and quite surprising.

Heart failure, for example, appears to

have seasonal and temporal patterns. A higher percentage of heart attacks occurs in cold weather and more people experience heart failure on Monday than on any other day of the week. In addition, people are more susceptible to heart attacks in the first few hours after waking.

Cardiologists first observed the morning phenomenon in the mid-1980s and have since discovered a number of possible causes. An early morning rise in blood pressure, heart rate and concentrating of heart stimulating hormones, plus reduction of blood flow to the heart, may all contribute to the higher incidence of heart attacks between the hours of 8.00 A.M. and 10.00 A.M.

In other studies, both birthday and bachelorhood have been implicated as risk factors. Statistics reveal that heart attack rates increase significantly for both females and males in the few days immediately preceding and following their birthdays.

And unmarried men are more at risk for heart attack than their married counterparts. Though stress is thought to be linked in some way to all of the aforementioned risk factors, intense research continues in the hope of future comprehending why and how heart failure is triggered.

41. What does the passage mainly discuss?
 - (a) cardiology
 - (b) diet and stress as factors in heart attack
 - (c) seasonal and temporal patterns of heart attacks
 - (d) risk factors in heart attacks
42. The word 'potential' could best be

replaced by which of the following ?

- (a) harmful
- (b) possible
- (c) unknown
- (d) primary

43. According to the passage, which of the following is not a possible cause of many heart attacks ?
 - (a) decreased blood flow to the heart
 - (b) increased blood pressure
 - (c) lower heart rate
 - (d) increase in hormones
44. Which of the following is cited as a possible risk factor?
 - (a) getting married
 - (b) rainy weather
 - (c) eating fatty foods
 - (d) driven fast
45. Which of the following does the passage infer?
 - (a) We now fully understand how the risk factors trigger heart attacks
 - (b) We do not fully understand the risk factors trigger heart attacks
 - (c) We have not identified risk factors associated with heart attacks
 - (d) We have recently begun to study how risk factors work

Passage – IV

I do not suggest that the cultural side of education should be ignored. On the contrary, I think, it is essential to the production of the sort of adult who best fits the modern world. But I think that what is important in cultural education should be conveyed, at any rate, in the early stages, by methods far more attractive than those now used. History and Geography should be taught at first by means of the cinema. When taught this way, they will give pleasure; attention will be spontaneous and therefore the impression will be less temporary. In spite of reforming movements, there

is still among educators a feeling that what is enjoyed without effort cannot have much educational value. I would have children made aware of the manners and customs of tribes and nations utterly remote from their own. Education conducted on these lines would do more than many books to cure provincialism in space and time and to make children realize that actual human beings with actual feelings can be outwardly very different from the people among whom they live, but inwardly composed of the same human material. A Zulu would not appear strange, remote or savage but one like themselves.

46. The writer said that the cultural side of education is needed to make man
- admire his environment
 - suitable for modern civilization
 - appreciate other civilizations
 - appreciate one's heritage
47. The writer criticized traditional educators for not
- imparting information about various' cultures
 - imparting information about remote tribes.
 - making learning an enjoyable activity
 - using cinema as a method of teaching
48. The response of the learners to teaching through cinema is
- superficial
 - enthusiastic
 - long-lasting
 - absorbing
49. The expression "to cure provincialism in space and time" means to get rid of
- selfish opinion
 - narrow views
 - obscure ideas
 - regional feelings

50. One of the goals of education should be to make children realise that
- there is a unified system of human values underneath cultural diversity
 - they must respect values of alien culture
 - regional cultures should not be ignored
 - human culture is diverse

ORDERING OF WORDS IN A SENTENCE

Directions: In the following items some parts of the sentence have been jumbled up. You are required to rearrange these parts which are labelled P, Q, R and S to produce the correct sentence. Choose the proper sequence and mark on your answer sheet accordingly. Example 'Z' has been solved for you.

- Z. It is well-known that
the effect is very bad
 (P) (Q)
on children of cinema
 (R) (S)

The proper sequence should be

- P S R Q
- S P Q R
- S R P Q
- Q S R P

Explanation

The proper way of writing the sentence is 'It is well known that the effect of cinema on children is very bad.' This is indicated by the sequence PSRQ and so (a) is the correct answer.

51. Alexander was a disciple of Aristotle
 (P)
who was a great conqueror
 (Q)
whom the world acknowledges the
greatest philosopher
 (R)

the world has ever known
(S)

The proper sequence should be:

- (a) P Q S R (b) Q P R S
(c) R P Q S (d) S P Q R

52. Jawaharlal Nehru

under the Cabinet Mission Scheme
(P)

was the first to articulate
(Q)

long before such an assembly was set up
(R)

the idea of a Constituent Assembly
(S)

The proper sequence should be

- (a) P Q S R (b) Q S R P
(c) R P Q S (d) S R P Q

53. The man is generally the one

(P)

who can work very hard

(Q)

when he must work

(R)

who can play most heartily when he
has the chance of playing

(S)

The proper sequence should be

- (a) P S Q R (b) Q R P S
(c) Q R S P (d) S P Q R

54. The reporter of the newspaper informs us that Lala Lajpat Rai spent

(P)

lecturing widely and attracting many
American leaders

(Q)

to sympathise with the Indian
nationalist position

(R)

almost five years in America

(S)

The proper sequence should be

(a) PSQR

(b) PSRQ

(c) RPSQ

(d) SPQR a

55. The practice of taking performance
boosting drugs among athletes

but checking it is not going to be easy
(P)

is generally conceded to be unfair
(Q)

of the detection technology
(R)

for the user is generally one jump
ahead

(S)

The proper sequence should be

- (a) Q P R S (b) Q P S R
(c) R Q P S (d) R Q S P

56. As lightning accompanies thunder
was mingled with

(P)

so in my character

(Q)

the mutterings of my wrath

(R)

a flash of humour

(S)

The proper sequence should be

- (a) P R S Q (b) Q P R S
(c) Q R P S (d) Q S P R

57. During hibernation

they have lost a great deal of weight
(P)

of course the animals consume
(Q)

and when they awake again
(R)

the fats accumulated in the summer
(S)

The proper sequence should be

- (a) P Q R S (b) Q S R P
(c) R Q S P (d) S Q P R

58. The house

As lightning accompanies thunder

(P)

that stands in front of us

(Q)

was built of stones

(R)

which were dug out of its own site

(S)

The proper sequence should be

(a) Q P R S (b) Q R P S

(c) Q R S P (d) Q S P R

59. The administration will soon launch to educate the people about their rights

(P)

a consumer protection drive

(Q)

against using fraudulent means

(R)

and to warn traders

(S)

The proper sequence should be

(a) P Q S R (b) P S Q R

(c) Q P S R (d) S P Q R

60. Some of our social sciences that cannot be attacked by modern society

(P)

such as psychology and sociology

(Q)

seem to have become

(R)

sacred cows

(S)

The proper sequence should be

(a) P Q R S (b) Q R S P

(c) R S P Q (d) R S Q P

Directions: The following items consist of two statements one labelled as the Assertion (A) and the other as Reason (R). You are to examine these two statements

carefully and select the answer of these items using the codes given below

Codes :

(A) Both A and R are individually true and R is the correct explanation of A.

(B) Both A and R are individually true but R is not the correct explanation of A.

(C) A is true but R is false.

(D) A is false but R is true.

61. Assertion (A): Subash Chandra Bose resigned from the presidency of the Indian National Congress in his second term.

Reason (R): He opposed to the Gandhian Movement based on non-violence.

(a) A (b) B (c) C (d) D

62. Rice is the product of

(a) tropical region

(b) subtropical region

(c) temperate region

(d) none of the above

63. Where is Pir Panjal range of mountains situated ?

(a) Uttar Pradesh

(b) Assam

(c) Jammu and Kashmir

(d) West Bengal

64. Match the following

List-I

List-II

A. World driest place 1. 65.33

B. Literates in India 2. Calama,

(As of desert population)

Atacama percentage of desert

C. Bhilai

3. Iron and steel industry

D. Kanchipuram

4. Silk industry

Codes:

	A	B	C	D
(a)	2	1	3	4

- | | | | | | |
|-----|---|---|---|---|--|
| (b) | 3 | 1 | 2 | 4 | |
| (c) | 4 | 1 | 2 | 3 | |
| (d) | 2 | 3 | 4 | 1 | |
65. What is a cloud ?
 (a) It is a kind of mist
 (b) It is a kind of frost
 (c) It is a kind of condensed form of dew
 (d) It is a kind of fog lifted above the earth surface
66. About 85% of the raw silk produced in India comes from :
 (a) Kerala (b) M.P.
 (c) Maharashtra (d) Karnataka
67. The term secular was added in the preamble to the Indian Constitution by
 (a) 41st Amendment
 (b) 42nd Amendment
 (c) 43rd Amendment
 (d) 44th Amendment
68. Who finally approves the draft of five Year Plan ?
 (a) Union Cabinet
 (b) President
 (c) National Development Council
 (d) Parliament and State Legislatures
69. Which country is the latest to join the U.N. as a member ?
 (a) Switzerland
 (b) Hong Kong
 (c) Taiwan
 (d) E. Timor
70. In which mode of expression, the concentration of a solution remains independent of temperature ?
 (a) Molality (b) Normality
 (c) Formality (d) Molarity
71. Oxidation number of Fe in Fe_3O_4 is
 (a) $1/2$ (b) $2/6$
 (c) $8/3$ (d) $3/2$
72. The molecule of ortho hydrogen is distinguished from para hydrogen by
 (a) two electrons moving in opposite directions
 (b) two electrons moving in the same directions
 (c) two protons revolving in the opposite directions
 (d) two protons revolving in the same directions
73. Sodium cannot exhibit +2 oxidation state because its
 (a) IE_2 value is less than IE_1 value
 (b) IE_2 value is higher than IE_1 value
 (c) IE_2 value and IE_1 value are equal
 (d) IE_2 value is zero
74. The conjugate base of a strong acid is
 (a) strong base (b) strong acid
 (c) weak acid (d) weak base
75. An element with atomic number 84 and mass number 218 loses one α -particle and two β -particle in the three successive stages. The resulting element will have
 (a) At. no. 84 and mass no. 214
 (b) At. no. 82 and mass no. 218
 (c) At. no. 84 and mass no. 218
 (d) At. no. 82 and mass no. 214
76. What is the percentage (%) of H_2O in $\text{Fe}(\text{CNS})_3 \times 3\text{H}_2\text{O}$?
 (a) 45 (b) 30
 (c) 19 (d) 25
77. The Saka era commencing from AD 78 was founded by
 (a) Kanishka
 (b) Asoka
 (c) Chandragupta
 (d) Vikramaditya
78. Which 'sufi-saint' dargah is situated at Ajmer ?
 (a) Baba Farid
 (b) Qutub-din-Bakhtiyar Kaka
 (c) Moinuddin Chisti

- (d) Khwaja Bahuddin
79. Who was the architect who designed "Taj Mahal" ?
 (a) Mohammad Hussain
 (b) Ustad Isa
 (c) Shah Abbas
 (d) Ismail
80. Which of the following States has the largest concentration of tea plantation in India ?
 (a) Assam
 (b) Bihar
 (c) Meghalaya
 (d) Arunachal Pradesh
81. Among the following rivers which river known was as 'Arun river' in the beginning?
 (a) Sone (b) Kossi
 (c) Chambal (d) Gomti
82. Which place is called as 'Sangam' of Bhagirathi and Alaknada ?
 (a) Dev Prayag (b) Rudra Prayag
 (c) Chambal (d) Vishnu Prayag
83. Din-i-illahi of Akbar was not a success because:
 (a) After Akbar it was not patronised
 (b) the muslim found it difficult to accept other religions
 (c) it was not suitably projected to the masses
 (d) all of the above reasons
84. Study the following map and match the list-I (R, S, T U, V show the mountain) list-II (their names)



- | List-I | List-II |
|--------|---------------------|
| A. R | 1. Rajmahal Hill |
| B. S | 2. Vindhya Parvat |
| C. T | 3. Maikal Hill |
| D. U | 4. Satpuda Mountain |
| E. V | 5. Nilgiri |

Codes:

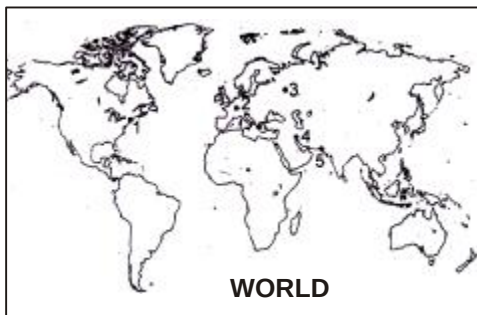
	A	B	C	D	E
(a)	3	5	1	2	4
(b)	1	5	3	4	2
(c)	4	3	2	1	5
(d)	5	1	4	3	2

85. In this map 1, 2, 3 and 4 indicate that the correct sequence of Indian rivers



- (a) Vaigai, Cauvery, Tungbhadra and Godavari
- (b) Mahanadi, Godavari, Krishna, and Cavery
- (c) Cauvery, Krishna, Venganga and Damodar
- (d) Cauvery, Tungbhadra, Godavari and Mahanadi

86. In this map 1, 2, 3 and 4 indicate that group of cities is:



- (a) Washington, Paris, Stockholm, Kabul
 - (b) New York, Madrid, Moscow, Tehran, Basra
 - (c) Tehran, Washington, Paris, Moscow
 - (d) New York, Rome, Berlin, Tehran
87. The number of floating ribs in the human body is
- (a) 6 pairs
 - (b) 5 pairs
 - (c) 3 pairs
 - (d) 2 pairs
88. Fish eradicate the mosquito larvae is:
- (a) Cuttler fish
 - (b) Anabus
 - (c) Gambusia
 - (d) Rohu
89. A pair of insectivorous plant is:
- (a) Venus fly trap and Rafflesia
 - (b) Nepenthes and bladderwort
 - (c) Drosera and Rafflesia
 - (d) Dionaea and Viscum
90. Consider the following organs:
- | | |
|------------------|-----------------|
| 1. Cerebrum | 2. Diencephalon |
| 3. Henle of loop | 4. Nephron |
- The organs related to brain are
- (a) 1 and 3
 - (b) 1, 2 and 4

- (c) 1 and 2
 - (d) 1, 2, 3 and 4
91. The smallest bird is:
- (a) humming bird
 - (b) rhea
 - (c) kiwi
 - (d) cock
92. Which of the following diseases spread through insects ?
- | | |
|---------------------|------------------|
| 1. Gambian fever | 4. Oriental sore |
| 2. Chagga's disease | |
| 3. Cholera | |
- (a) 1, 2 and 3
 - (b) 1, 3 and 4
 - (c) 2, 3 and 4
 - (d) 1, 2, 3 and 4
93. The child shown in the figure is suffering from some malnutrition. The name of the disorder related to this



- (a) obesity
 - (b) kawashiorkar
 - (c) myxoedema
 - (d) marasmus
94. Which of the following hormones is secreted by pituitary gland ?
- | | |
|-------------|--------|
| 1. STH | 2. FSH |
| 3. Oxytocin | 4. PTH |
- (a) 1 and 2
 - (b) 3 and 4
 - (c) 1, 2 and 3
 - (d) 1, 2, 3 and 4
95. Consider the following statements:
- Rods are more in eyes of diurnal animals.
 - Cones are more in eyes of nocturnal animals.
- Correct statement(s) is/are
- (a) only 1
 - (b) only 2
 - (c) neither 1 nor 2
 - (d) both 1 and 2
96. Fat soluble vitamin(s) is/are
- Pantothenic acid
 - Tocopherol

3. Pyridoxine
4. Folic acid
(a) only 1 (b) 1, 2 and 3
(c) only 2 (d) 1, 2, 3 and 4
97. Consider the following statements :
1. Lungs are found in all vertebrates except birds.
2. Book lungs are respiratory organs in scorpion.
3. Aquatic animals like prawns, fishes and tadpole respire in water with gills.
4. Cutaneous respiration is not present in earthworm.
Incorrect statements are:
(a) 1 and 2 (b) 2 and 4
(c) 1 and 3 (d) 1 and 4
98. The countries included in 'Plus three' of ASEAN, are :
1. Northern Korea
2. Bharat
3. South Korea
4. China
5. Japan
Codes:
(a) 3, 4, 5 (b) 1, 2, 3
(c) 2, 4, 5 (d) 1, 4, 5
99. Which of the following is most urbanised State of India ?
(a) Maharashtra (b) Mizoram
(c) Goa (d) Tamil Nadu
100. Which State tourism department's motto is "Gods own country" ?
(a) Tamil Nadu
(b) Himachal Pradesh
(c) Assam (d) Kerala
101. All the following individuals have something common, what is that ?
1. John Kennedy Jr.
2. Zia-ul-Haq
3. Dag Hammarskjöld
(a) All were sons of famous politician
(b) All died at young age
(c) All died in the plane crash
(d) All died in war
102. Chipko Movement
(a) is originated in the Garhwal region of Western Himalayas
(b) is related to environment
(c) is related to mass education
(d) both 'a' and 'b' are true
103. The line of map connecting points of equal temperature at a given time is
(a) isohyet (b) isobar
(c) isthmus (d) isotherm
104. Arrange the following rivers from south to north
1. Cauvery 2. Krishna
3. Godavari 4. Mahanadi
Codes:
(a) 1, 3, 2, 4 (b) 3, 4, 1, 2
(c) 2, 4, 3, 1 (d) 1, 2, 3, 4
105. "Kuchipudi" dance was originated by
(a) Andhra Pradesh
(b) Karnataka
(c) Punjab (d) Rajasthan
106. No money bill can be introduced in the Lok Sabha without the approval of the
(a) Vice President
(b) President
(c) Prime Minister
(d) Finance Minister
107. Which of the Mughal emperors was a well known poet ?
(a) Akbar
(b) Shahjahan
(c) Humayun
(d) Bahadurshah Jafar
108. When a mango is kept in dilute aqueous solution of HCl, it
(a) swells (b) bursts
(c) shrinks (d) none of these

109. Arrange H_2SO_4 (I), H_3PO_4 (II) and HClO_4 (III) in decreasing order of acidic strength

- (a) I > III > II (b) I > II > III
(c) III > II > I (d) III > I > II

110. Which of the following is a chemical change?

- (a) Melting of sodium in nuclear reactor
(b) Melting of steel
(c) Sublimation of iodine
(d) Explosion of dynamite

111. The composition of Duralumin is

- (a) Al = 94%, Mg = 6%
(b) Cu = 56%, Zn = 24%, Ni = 20%
(c) Cu = 95%, Al = 5%
(d) Al = 95%, Cu = 4%, Mn = 0.5%, Mg = 0.5%

112. Which one of the following pairs is correctly matched?

- (a) Electron - J.J. Thomson
(b) Charge on electron - James Chadwick
(c) Nucleus - Millikan
(d) Neutron - Rutherford

113. Which one of the following is the common glass?

- (a) $\text{K}_2\text{SiO}_3 \cdot \text{CaSiO}_3 \cdot 4\text{SiO}_2$
(b) $\text{Na}_2\text{SiO}_3 \cdot \text{CaSiO}_3 \cdot 4\text{SiO}_2$
(c) $\text{K}_2\text{SiO}_3 \cdot \text{PbSiO}_3 \cdot 4\text{SiO}_2$
(d) Na_2SiO_3

114. Which one of the following is the anhydride of sulphurous acid?

- (a) H_2SO_4 (b) SO_2
(c) SO_3 (d) H_2S

115. Match list-I with list-II and select the correct answer using the codes given below the lists:

- | List-I | List-II |
|-----------------|--|
| (Chemical) | (Formulae) |
| A. Washing soda | 1. $\text{Pb}(\text{OH})_2$ |
| B. Lime stone | 2. Pb_3O_4 |
| | 3. $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ |
| | 4. CaCO_3 |

C. Red lead

D. White lead

Codes:

	A	B	C	D
(a)	1	2	3	4
(b)	3	4	2	1
(c)	4	3	2	1
(d)	4	3	1	2

116. Which of the following statements are true regarding graphite?

- It is the crystalline allotrope of carbon.
- C—C bond distance is greater than diamond.
- The hybridisation of carbon in graphite is sp^3 .
- Graphite is the good conductor of heat and electricity.

Which of these statements are correct?

- (a) 1 and 2 (b) 3 and 4
(c) 1 and 4 (d) 2 and 4

117. Heavy water is a compound of:

- (a) hydrogen and heavier isotope of oxygen
(b) heavier isotopes of hydrogen and oxygen
(c) oxygen and heavier isotope of hydrogen
(d) none of the above

118. Which general was responsible for Jallianwala Bagh tragedy?

- (a) General Dalhousie
(b) General Dyer
(c) General Mountbatten
(d) General William Bentinck

119. Which is the southernmost place in the Indian union?

- (a) Kanyakumari (b) Rameshwaram
(c) Indira Point (d) Vivekanand

120. Who is legally competent under the Indian Constitution to declare war or

conclude peace ?

- (a) Prime Minister
- (b) The President
- (c) The Parliament
- (d) The Council of Ministers

1. Which of the following statement is not correct about vinyl chloride ?

- (a) It can be prepared by addition of hydrogen chloride to ethyne.
- (b) It can be co-polymerised with vinyl acetate to give strong adhesive copolymers suitable for surface coatings.

(c) It polymerises to give P.V.C. a thermoplastic polymer.

(d) It is more reactive towards nucleophiles than ethyl chloride.

2. Which one of the following is known as westrosol ?

- (a) Acetylene tetrachloride
- (b) Acetylene dichloride
- (c) Trichloroethylene
- (d) Allyl chloride.

3. The compound with no dipole moment is

- (a) methyl chloride.
- (b) carbon tetrachloride.

(c) methylene chloride

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(d) chloroform.

4. If chloroform is left open in air in the presence of sun rays,

- (a) explosion takes place.
- (b) poisonous gas phosgene is formed.
- (c) polymerisation takes place.
- (d) No reaction takes place.

5. Which of the following statements is not correct about the haloalkanes ?

- (a) They are derived from alkenes by replacement of one of its hydrogen atoms by halogens.
- (b) They can be prepared by the addition of hydrogen halides to alkenes.
- (c) They undergo nucleophilic substitution reactions in which the halogen atom is replaced by another atom or group.
- (d) They can be reduced with lithium aluminium hydride to give the corresponding alkanes.

6. Which of the following statements is incorrect about the alkyl halides ?

(a) They belong to the homologous series of general formula

$C_nH_{2n+1}X$ where $X = Cl, Br \text{ or } I$ and $n = 1, 2, 3$ etc.

(b) They can be prepared by the reaction of the hydrogen halide and the appropriate alcohol e.g.

$ROH + HX \rightarrow RX + H_2O$.

(c) They show reactivity in the order $RI > RBr > RCl$ where $R = \text{alkyl group}$.

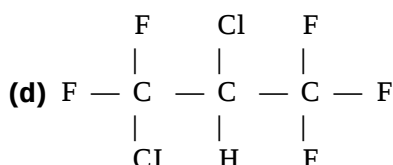
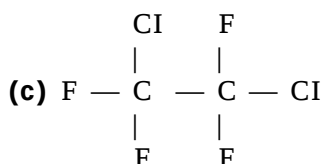
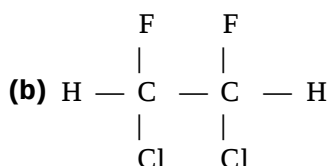
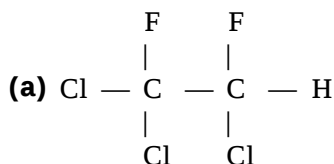
(d) They form nitrites when refluxed with potassium cyanide in ethanol.

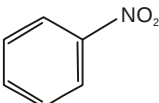
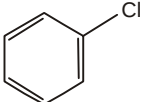
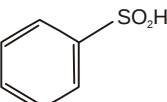
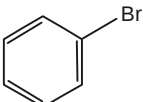
7. Which of the following statements is not correct about chloroform ?

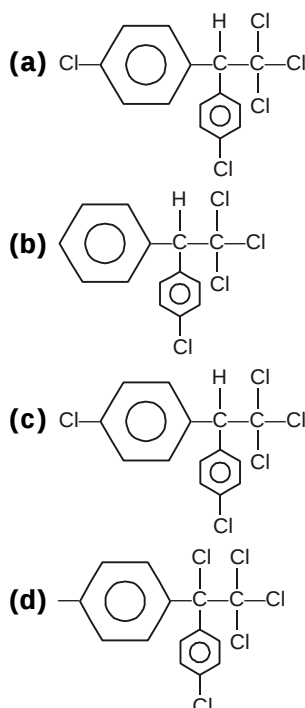
- (a) It is a highly inflammable liquid.
- (b) It is a colourless, sweet-smelling liquid almost insoluble in water.
- (c) It can be used as an anaesthetic.
- (d) It can be prepared by the haloform reaction.

8. Freon 114 is an organic substance used in refrigerators and air conditioners. It is chemically called 1, 2 dichloro tetrafluoro ethane. Its

correct formula is



9. When a solution of sodium chloride, containing ethyl alcohol is electrolysed, it forms
 (a) ethyl alcohol. (b) chloral.
 (c) chloroform. (d) acetaldehyde.
10. When chlorobenzene is heated with chloral and cone. H_2SO_4 which one of the following compounds is formed?
 (a) Phenol (b) Benzoic acid
 (c) Polythene (d) D.D.T.
11. 1, 2-Dichloropropane is refluxed under a water-cooled condenser for some time with sodium hydroxide solution. The product is
 (a) propionaldehyde.
 (b) propanol.
 (c) propionic acid.
 (d) 1-chloro-1-hydroxypropane.
12. A compound was refluxed with excess KOH solution for an hour. After acidification with nitric acid, silver nitrate was added. No precipitate, appeared. Water compound could have been
 (a) $\text{CH}_3\text{CH}_2\text{I}$ (b) $\text{CH}_3\text{CH}_2\text{CH}_2\text{Br}$
 (c) CH_3COOI (d) $\text{C}_6\text{H}_5\text{Cl}$
13. When chloroform is treated with a primary amine and KOH we get
 (a) rose odour smell.
 (b) sour almond smell.
 (c) bad nectar-like smell.
 (d) sour oil of winter green like smell.
14. A sample of chloroform being used as an anaesthetic is tested by
 (a) Fehling solution.
 (b) ammoniacal CuCl .
 (c) AgNO_3 solution.
 (d) AgNO_3 solution after boiling with alk KOH.
15. The reaction least likely to occur is
- (a)  + $\text{HNO}_3 \xrightarrow{\text{H}_2\text{SO}_4}$ 
- (b)  + $\text{Cl}_2 \xrightarrow[\text{light}]{\text{ultraviolet}}$ 
- (c)  + $\text{H}_2\text{SO}_4 \longrightarrow$ 
- (d)  + $\text{Br}_2 \xrightarrow{\text{Fe}}$ 
16. Which of the following is the correct formula for dichlorodiphenyl trichloroethane?



17. An attempt was made to prepare ethyl iodide by gently warming methylated spirit, potassium iodide crystals and concentrated sulphuric acid, no ethyl iodide was produced because
- the mixture should not have been warmed.
 - the alcohol was dehydrated to ethylene.
 - methyl iodide was produced since methylated spirit is mainly methyl alcohol.
 - the potassium iodide was oxidised to iodine, which does not react with alcohol under these conditions.
18. When glycerol is heated with oxalic acid at 260°C , it gives
- formic acid.
 - allyl alcohol.
 - glyceryl oxalate.
 - alkyl alcohol.
19. When glycerol is heated with oxalic acid at 170°C , it yields
- HCOOH .
 - HCOOH and allyl alcohol.
 - tartaric acid.
 - allyl alcohol.
20. Which of the following is the structure of cellosolve ?
- $\text{ClH}_5-\text{O}-\text{CH}_2-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_2-\text{OH}$
 - $\text{CH}_3-\text{O}-\text{CH}_2-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_2-\text{OCH}_3$
 - $\text{CH}_3\text{CH}_2\text{O}-\text{CH}_2\text{CH}_2\text{OH}$
 - None of these.
21. In cold countries glycerol is added to the water in the radiator of cars during winter. This helps to
- bring down the specific heat of water.
 - lower the freezing point.
 - reduce the viscosity.
 - make water a better lubricant.
22. Dynamite is obtained by mixing nitroglycerine with
- saw dust and NH_4NO_3 .
 - cellulose nitrate.
 - cellulose nitrate and vaseline.
 - T.N.T.
23. Diketopiperazine is obtained by heating
- methylamine.
 - glycine.
 - propionic acid.
 - ammonium acetate.
24. When ethyl alcohol is heated with conc. H_2SO_4 at 140°C , the product obtained is
- ethylene.
 - diethyl ether.
 - diethyl sulphate.
 - ethyl hydrogen sulphate.
25. Ethyl alcohol can be distinguished from methyl alcohol by
- action of Cl_2 .

- (b) action of NH_3 .
 (c) determining their solubilities in H_2O .
 (d) iodoform test.
26. Which of the following statements is incorrect about ethylene glycol ?
 (a) It is a colourless liquid b.p. 197°C , used as an 'antifreeze'.
 (b) It is a dihydric alcohol.
 (c) It forms two series of esters, ethers and halides.
 (d) It reacts with sodium to give the di-sodium salt.
27. Which of the following statement is not true ?
 (a) Oxidation of a primary alcohol with chromic acid ($\text{Na}_2\text{Cr}_2\text{O}_7$ and H_2SO_4) yields an aldehyde as the first oxidation product.
 (b) Oxidation of a primary alcohol with potassium permanganate yields a carboxylic acid.
 (c) Oxidation of secondary alcohol with chromic acid yields a ketone.
 (d) A secondary alcohol with chromic acids yields the corresponding carboxylic acid.
28. Which of the following reacts with Lucas reagent most readily ?
 (a) $\text{CH}_3-\text{CH}_2-\text{Cl}$
 (b) $\text{CH}_3-\text{CH}_2-\text{CH}$
 (c) $\text{CH}_2=\text{CH}_2\text{CH}_3$
 (d) $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3-\text{C}-\text{OH} \\ | \\ \text{CH}_3 \end{array}$
29. Which of the following products is obtained by heating glycerine with $\text{Ba}(\text{OH})_2$?
 (a) Methylamine
 (b) Acetamide
 (c) Acetic acid
 (d) Barium acetate.
30. Which product is obtained when glycerol is heated with potassium bisulphate ?
 (a) Acrolein
 (b) Allyl alcohol
 (c) Acetic acid
 (d) None of these.
31. When a mixture of ethanol and methanol are heated in the presence of concentrated H_2SO_4 the organic product(s) is (are)
 (a) $\text{CH}_3\text{OC}_2\text{H}_5$
 (b) CH_3OCH_3 and $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$
 (c) $\text{CH}_3\text{OC}_2\text{H}_3$ and CH_3OCH_3
 (d) $\text{CH}_3\text{OC}_2\text{H}_5$, CH_3OCH_3 , and $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$
32. The hydrolysis of stearin produces stearic acid and
 (a) sodium hydroxide.
 (b) glycerol.
 (c) hydrochloric acid.
 (d) propyl alcohol.
33. Primary alcohols cannot be prepared by
 (a) hydration of alkenes in the presence of acid.
 (b) reduction of ketones with zinc and hydrochloric acid.
 (c) hydrolysis of alkyl halides with aqueous alkali.
 (d) hydrolysis of ethers in strongly acidic conditions.
34. Rectified spirit is a mixture of
 (a) 95% ethyl alcohol + 5% water.
 (b) 94% ethyl alcohol + 4.53% water.
 (c) 94.47% ethyl alcohol + 5.43% water.
 (d) 95.57% ethyl alcohol + 4.43% water.
35. Lucas reagent for identification of alcohol is
 (a) P_4 , I_2 and AgNO_2

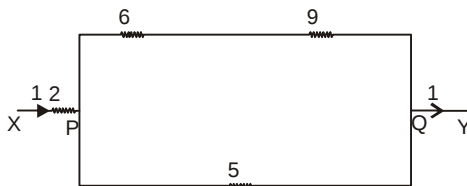
- (b) Alkaline KMnO_4
 (c) conc. HCl and anhy. ZnCl_2
 (d) hot reduced copper.
36. The boiling point of ethanol is higher than that of methanol. The main reason for this is that
 (a) the relative molecular mass of ethanol is higher than that of methanol.
 (b) there are hydrogen bonds between ethanol molecules, but not between methanol molecules.
 (c) the Van der Waal's forces between ethanol molecules are stronger than those between methanol molecules.
 (d) the, covalent bonds in the ethanol molecule are stronger than those in the methanol molecule.
37. An organic compound dissolved in dry benzene evolved hydrogen on treatment with sodium. It is
 (a) a ketone.
 (b) an aldehyde.
 (c) a tertiary amine.
 (d) an alcohol.
38. Tincture of iodine consists of
 (a) a solution of iodine in alcohol.
 (b) a solution of iodine in water.
 (c) a precipitate of iodine in water.
 (d) pure iodine.
39. When acetyl chloride is reduced with LiAlH_4 , the product formed is
 (a) methyl alcohol. (b) ethyl alcohol.
 (c) acetaldehyde. (d) acetone.
40. What product is obtained by treating alcohols with Grignard's reagent ?
 (a) Alkanes (b) Alkenes
 (c) Alkynes (d) Higher alcohols.
41. Ethyl ether on heating in the presence of Al_2O_3 at 400° gives
 (a) acetylene. (b) ethylene.
 (c) ethane. (d) ethyl alcohol.
42. Which of the following reagents can distinguish aldehyde and ketone ?
 (a) Fehling's solution
 (b) H_2SO_4 solution
 (c) NaHSO_4 solution
 (d) NH_3 solution
43. Formaldehyde reacts with NH_3 to form urotropine which has the composition
 (a) $(\text{CH}_2)_4\text{N}_6$ (b) $(\text{CH}_2)_5\text{N}_5$
 (c) $(\text{CH}_2)_6\text{N}_4$ (d) $(\text{CH}_2)_6\text{N}_6$
44. On strongly heating anhydrous calcium acetate, which compound is formed ?
 (a) Acetone
 (b) Ether
 (c) Acetic anhydride
 (d) Carbon monoxide.
45. When diethyl ether is heated with phosphorus pentachloride, it yields
 (a) ethyl chloride.
 (b) 1, 1'-dichloroethyl ether.
 (c) Both (A) and (B).
 (d) None of these.
46. When sodium ethoxide and ethyl chloride are heated, the product formed is
 (a) ether. (b) ethyl alcohol.
 (c) acetaldehyde. (d) acetic acid.
47. Which of the following statements is correct in case of aliphatic aldehydes and ketones?
 (a) Aldehydes are by oxidation of primary alcohols and ketones by that of secondary alcohols.
 (b) Aldehydes are obtained by oxidation of secondary alcohols and ketones by that of primary alcohols.
 (c) Aldehydes and ketones cannot be represented by the same general formula.
 (d) Aldehydes and ketones cannot be oxidised further.

48. A compound X with molecular formula C_4H_8O does not react with sodium, displacing hydrogen, neither does it react with phosphorus pentachloride to give hydrogen chloride. X reduces an alkaline solution of copper (II) salt on gentle heating. From this information we can say that X is
(a) a primary alcohol.
(b) a secondary alcohol.
(c) a tertiary alcohol.
(d) an aldehyde.
49. When ethyl iodide is treated with silver oxide, the product obtained is
(a) C_2H_5OH
(b) $C_2H_5OC_2H_5$
(c) Both (a) and (b)
(d) None of these.
50. The reaction in which an alkyl halide on treatment alkoxide yields ether is known as
(a) Kolbe's reaction.
(b) Williamson's.
(c) Wurtz's reaction.
(d) Hydrolysis.
51. Ether can be freed from peroxide by shaking with
(a) ferrous salt solution.
(b) copper sulphate solution.
(c) ferric salt solution.
(d) None of these.
52. Williamsons synthesis is used to prepare
(a) acetone. (b) diethyl ether.
(c) PVC. (d) Bakelite.
53. Which of the following is more reactive towards the nucleophilic reagents ?
(a) $HCHO$
(b) CH_3COCH_3
(c) CH_3CHO (d) None of these.
54. Schiff's reagent is
(a) ammoniacal silver nitrate.
(b) ammoniacal cuprous chloride.
(c) resorcinol solution in water decolorised by SO_2 .
(d) None of these.
55. Schiff's reagent gives pink colour with
(a) alcohols.
(b) acetaldehyde.
(c) acetone.
(d) mesitylene chloride.
56. Acetone on distillation with conc. H_2SO_4 gives
(a) m-xylene. (b) mesitylene.
(c) cumene. (d) None of these.
57. When diethyl ether is treated with chlorine, it yields
(a) ethane.
(b) ethyl chloride,
(c) perchlorodiethyl ether.
(d) acetyl chloride.
58. In contact with air or ozone, ethers form
(a) acids. (b) alcohols.
(c) peroxides. (d) aldehydes.
59. Formaldehyde condenses with phenol in the presence of dil. H_2SO_4 to yield
(a) Bakelite. (b) Nylon.
(c) Lewistite. (d) Formose.
60. Which of the following compounds would undergo the Cannizzaro's reaction ?
(a) Acetaldehyde (b) Benzaldehyde
(c) Propionaldehyde
(d) Anisole.
61. A coil of resistance 20 ohms and inductance 0.5 henry is switched on to direct current 200 volt supply. Find the rate of increase of current at the instance of closing the switch.
(a) 200 amp/sec (c) 100 amp/sec
(b) 400 amp/sec (d) None of these
62. The resistance of a resistance thermometer at $19^\circ C$ is 3.50 ohm and

at 99°C is $3.66\ \Omega$. At what temperature its resistance will be $4.30\ \Omega$?

- (a) 217°C (b) 419°C
(c) 313°C (d) None of these

63. Four resistors are connected between two points X and Y in an electric circuit as shown below :



The $5\ \Omega$ resistance develops 20.00 cal of heat due to current flowing through it. The heat developed in $2\ \Omega$ resistance (in cal) is

- (a) 14.2 (b) 7.1
(c) 20 (d) 15.3

64. An electrical wire made of copper is stretched to make it 0.1% longer. The percentage change in resistance is :

- (a) 0.1% (b) 0.01%
(c) 0.2% (d) 0.02%

65. Two resistances of $400\ \Omega$ and $800\ \Omega$ are connected in series with $6\ \text{V}$ battery of negligible internal resistance. A voltmeter resistance $10,000\ \Omega$ is used to measure the potential difference across $400\ \Omega$. The error in the measurement of potential difference in volts approximately is :

- (a) 0.01 (b) 0.02
(c) 0.04 (d) 0.05

66. A galvanometer, having resistance of $500\ \Omega$, gives a full scale deflection for a current of $0.05\ \text{A}$. The length in metre of a resistance wire of area of cross-section $2.97 \times 10^{-2}\text{cm}^2$ that can be used to convert the galvanometer into an ammeter, which can read a maximum of $5\ \text{A}$. A current is

(Specific resistance of the wire = $5 \times 10^{-2}\ \Omega\text{m}$)

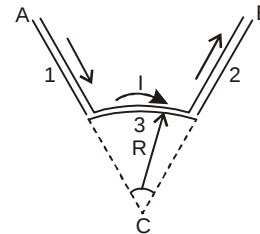
- (a) 9 (b) 6
(c) 3 (d) 1.5

67. A wire AB carries a current (as shown). It consists of a circular arc

of radius R and central angle $\frac{\pi}{2}$ rad,

and two straight sections whose extensions intersect the centre C of the arc.

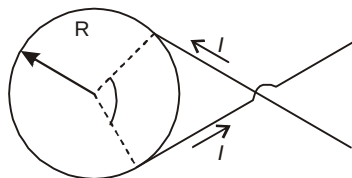
The magnetic field produced by current at C is



- (a) $\frac{\mu_0 I}{4R}$ (b) $\frac{\mu_0 I}{2R}$
(c) $\frac{\mu_0 I}{R}$ (d) Zero

68. A wire carrying current i has configuration as shown below :

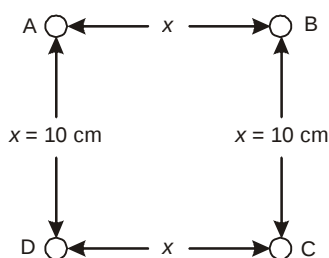
Two semi-infinite straight sections, both tangent to the same circle, are connected by a circular arc, of central angle θ , along the circumference of the circle, with all sections lying in the same plane. The value of B (magnetic field) to be zero at the centre, the value of θ in radians is :



- (a) 1 rad (b) 2 rad
(c) 3 rad (d) 4 rad

69. Four long wires are parallel to each other, their cross sections forming the corners of a square with side $x = 10$ cm. A 10A current exists in each wire in the direction shown below

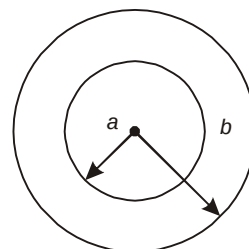
The magnitude of $\vec{B}$ at the centre of the square is



- (a) 8×10^{-8} T (b) 8×10^{-8} T
(c) 0.80 T (d) 0

70. The given figure shows the cross section of a long conducting cylinder with inner radius $a = 2.0$ cm and outer radius $b = 4.0$ cm.

The cylinder carries a current out of the page, and current density J is given by $J = cr^2$, where $c = 3 \times 10^6$ A/m⁴. The value of magnetic field B at a point 3.0 cm from central axis of the cylinder is



- (a) 20.0×10^{-5} T (b) 2.0×10^{-5} T
(c) 0.20×10^{-5} T (d) 0.002×10^{-5} T

71. Two wires, both of length L , are formed into a circle and a square, each of them carries current i . The magnetic field produced by square at centre is B_1 and that due to circle at centre is B_2 . Then which one of the following is true ?

- (a) $B_1 = B_2$
(b) $B_1 > B_2$
(c) $B_1 < B_2$
(d) B_1 is parallel to B_2 .

72. A magnetic dipole is placed in two perpendicular magnetic fields $\vec{B}_1$, and $\vec{B}_2$ and is in equilibrium making an angle θ with $\vec{B}_1$. Then which one of the following relations holds true ?

- (a) $B_1 = B_2$
(b) $B_1 \cos \theta = B_2 \sin \theta$
(c) $B_1 \sin \theta = B_2 \cos \theta$
(d) $B_1 = B_2 \sec \theta$

73. A wire is shaped to form a regular hexagon of side 'a'. If a current of 1 ampere flows through the wire, then the magnetic field at the centre of the hexagon is

- (a) $B = \frac{4\sqrt{3}}{a} 10^5$ T
(b) $B = \frac{3\sqrt{5}}{a} 10^7$ T

(c) $B = \frac{3\sqrt{5}}{a} 10^5 \text{ T}$

(d) $B = \frac{4\sqrt{5}}{a} 10^7 \text{ T}$

74. A current i passes through a coil of radius a having n turns. It is placed in an external magnetic field of induction $\vec{B}$. The plane of the coil is perpendicular to $\vec{B}$ and the current in it appears clockwise when viewed along the direction of $\vec{B}$. The work done in rotating the coil through 180° is

- (a) π Joule
(b) $\pi \mu_0 a^2 B$ Joule
(c) $2 \pi a^2 B$ Joule
(d) zero

75. A domain in ferromagnetic iron is in the form of a cube of side length 1 mm. The molecular mass of iron is 55 g/mole and its density is 7.9 g/cm^3 . Each iron atom has a dipole moment of $9.27 \times 10^{-24} \text{ Am}^2$. The maximum possible magnetisation of the domain is

- (a) $8.0 \times 10^5 \text{ Am}^{-1}$
(b) $8.0 \times 10^{-5} \text{ Am}^{-1}$
(c) 800 Am^{-1}
(d) 80 Am^{-1}

76. Two circular coils P and Q with their centres lying on the same axis have same number of turns and carry equal currents in the same sense. They are separated by a distance, have different diameters but subtend same angle at a point O lying on their common axis. The coil Q lies exactly midway between coil P and the point O. The magnetic field at point O due to coils P and Q is B_1 and B_2 . Then

- (a) $B_1 = B_2$ (b) $B_1 > B_2$

(c) $B_1 < B_2$

- (d) Data insufficient.

77. Assuming the earth to be a spherical magnet, find its magnetic moment. (Radius of earth = 6400 km, vertical intensity of earth's magnetic field at the south pole = 0.6 oersted.)

- (a) $7.20 \times 10^{24} \text{ Am}^2$
(b) $6.02 \times 10^{24} \text{ Am}^2$
(c) $6.86 \times 10^{24} \text{ Am}^2$
(d) $7.86 \times 10^{22} \text{ Am}^2$

78. A uniform magnetic shell is bounded by concentric circles of radius a and b . Find the force it exerts at a point whose distance is

$$\frac{a^{2/3} b^{2/3}}{a^{2/3} + b^{2/3}} \left(\frac{1}{2} \right)$$

from its centre along its axis.

- (a) 0 (b) 2 (c) 3 (d) 4

79. A soft iron ring of permeability μ has a number of turns of wire uniformly wound over it. A current flows in the wire. A small air-gap is formed in the iron by cutting out a thin sector bounded by two planes through the axis of the ring, making a small angle θ with each other. By what factor is B in the gap is reduced from the previous value?

(a) $1 + \frac{\mu}{2}$

(b) $2 + \frac{\mu}{2}$

(c) $1 + \frac{\mu}{2}$

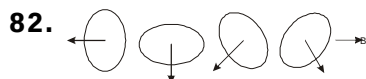
(d) $1 - \frac{1}{0} + \frac{2}{0}$

80. A sheet of a magnetic material is placed perpendicular to a uniform magnetic intensity H . Find the magnetisation factor of the sheet.

(a) 2μ
(b) 4μ
(c) 3μ
(d) 5μ

81. Find the total reluctance and permeance between the ends of parallel – connected rectangular iron blocks as shown in the adjacent figure. Given $\mu_1 = 500 \mu_0$ and $\mu_2 = 2000 \mu_0$.

(a) $4.3 \times 10^4 \frac{1}{\text{henry}}$
(b) $5.3 \times 10^4 \frac{1}{\text{henry}}$
(c) $2.3 \times 10^5 \frac{1}{\text{henry}}$
(d) $2.4 \times 10^5 \frac{1}{\text{henry}}$



Figures represent four positions of a current carrying coil in a magnetic field directed towards right. A represents the direction of area vector of the coil. Then correct order of potential energy is

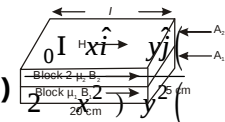
(a) $I > II > III > IV$
(b) $I > III > II > IV$
(c) $II > I > III > IV$
(d) $IV > III > I > II$

83. A long straight wire along the z -axis carries a current I in the negative z direction. The magnetic field vector B

at a point having coordinates (x, y) in the $z = 0$ plane is

(a) $\frac{\mu_0 I}{2} \frac{y\hat{i} - x\hat{j}}{x^2 + y^2}$ (b) $\frac{\mu_0 I}{2} \frac{x\hat{i} + y\hat{j}}{x^2 + y^2}$

(c) $\frac{\mu_0 I}{2} \frac{x\hat{i} - y\hat{j}}{x^2 + y^2}$ (d) $\frac{\mu_0 I}{2} \frac{y\hat{i} + x\hat{j}}{x^2 + y^2}$



84. Three infinitely long thin conductors are joined at the origin of coordinates and lie along the x -, y - and z -axes. A current I flowing along the conductor lying along the x -axis divides equally into the other two at the origin. The magnetic field at the point $(0, -a, 0)$ has magnitude

(a) $\frac{\mu_0 I}{4a}$ (b) $\frac{3\mu_0 I}{4\sqrt{2}a}$
(c) $\frac{\sqrt{5}\mu_0 I}{8a}$ (d) $\frac{\sqrt{3}\mu_0 I}{2a}$

85. A ring of mean radius 15 cm has 3500 turns of wire wound on ferromagnetic core of relative permeability 800. What is the magnetic field B in the core for a magnetising current of 1.2 A?

(a) 5.84 T (b) 4.48 T
(c) 3.48 T (d) 4.84 T

86. A small wire of mass m slides without friction on two rails placed at a distance d apart. The track lies in a vertical magnetic flux of induction (uniform field) B . A constant current i flows along the rail across the wire and back down the other rail. The acceleration of the wire is

(a) $\frac{Bmi}{d}$ (b) mBd

(c) $\frac{mid}{B}$

(d) $\frac{Bid}{m}$

87. The scale of a galvanometer is divided into 150 equal divisions. The galvanometer has the current sensitivity of 10 divisions per mA and the voltage sensitivity of 2 division per mV. How the galvanometer be designed to read 6A, per division?

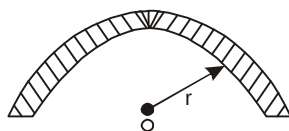
(a) $8.33 \times 10^5 \text{ W}$ (b) $7.26 \times 10^4 \text{ W}$
(c) $9.34 \times 10^6 \text{ W}$ (d) $2.75 \times 10^3 \text{ W}$

88. A long solenoid of radius 2 cm has 100 turns/cm and is surrounded by a 100-turn coil of radius 4cm having a total resistance of 20 W. The coil is connected to a galvanometer as shown in the figure. If the current in the solenoid is changed from 5A in one, direction to 5A in the opposite direction, find the charge which flows through the galvanometer.

(a) 700 μC (b) 600 μC
(c) 300 μC (d) 800 μC

89. A long straight wire having the form of a thin half-ring of radius r is taken. Current is made to flow through this wire, as shown in the figure.

What is the induction of magnetic field at O ?



(a) $\frac{0i}{2R}$

(b) $\frac{0i}{R}$

(c) $\frac{0i}{2R}$

(d) $\frac{0R}{2}$

90. In an AC circuit phase difference between current and potential is $\pi/4$.

The variation of I and E vs t is represented in the graph. If $E_0 = E_0 \cos(100t)$. Then components of the circuit are

(a) $R = 1 \text{ kW}$ and $C = 10 \mu\text{F}$
(b) $R = 100 \text{ kW}$ and $C = 10 \mu\text{F}$
(c) $R = 1 \text{ W}$ and $C = 100 \text{ PF}$
(d) $R = 1 \text{ MW}$ and $C = 1 \mu\text{F}$

91. A condenser of capacity 1 microfarad is connected with an inductance of 10 millihenry. Find the natural frequency of the circuit.

(a) 1550 Hz (b) 1575 Hz
(c) 1591 Hz (d) 1600 Hz

92. Using an AC voltmeter, the potential difference in the electrical line in a house is read to be 234V. If the line frequency is known to be 50Hz, the equation of the line voltage is

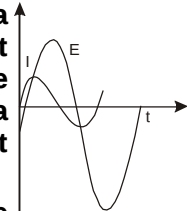
(a) $V = 220 \sin 100 \text{ pt}$
(b) $V = 165 \sin (100 \text{ pt})$
(c) $V = 440 \sin (100 \text{ pt})$
(d) $V = 331 \sin (100 \text{ pt})$

93. An alternating emf of frequency 50 Hz is applied to a Series circuit of resistance 20 ohm, an inductance of 100 mH and a capacitor of 30 μF . By what angle does the current lag or lead the applied emf and ?

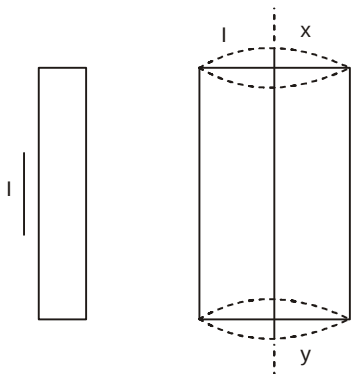
(a) $\tan^{-1} (-3.15)$ (b) $\tan^{-1} (-1.08)$
(c) $\tan^{-1} (2.22)$ (d) None of these

94. A rectangular coil of wire rotates at a constant speed about one of its sides xy . The side xy is parallel to a long, straight current carrying conductor.

The induced emf will be minimum when the coil

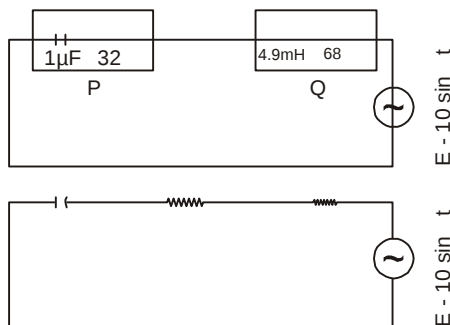


is



- (a) perpendicular to the plane of the conductor.
 (b) in the plane of the conductor.
 (c) parallel to the plane of conductor.
 (d) outside the plane of the conductor.

95. A box P and a coil Q are connected in series with an AC source of variable frequency. The emf of source is constant at 10 V. Box P contains a capacitance of $1\mu\text{F}$ in series with a resistance of 32Ω . Coil Q has a self-inductance 4.9 mH and a resistance of 68Ω in series. The frequency is adjusted so that the maximum current flows in P and Q. Find the impedance of P and Q at this frequency.



- (a) 79.0Ω , 80Ω (b) 28.66Ω , 100Ω
 (c) 76.96Ω , 99Ω (d) None of these
96. A certain choke coil of negligible

resistance takes a current of 8 amperes when connected to a supply of 100 volts, at 50 cycles per sec. A certain non-inductive resistance, under the same conditions, carries a current of 10 amperes. If the two are transferred to a supply system working at 150 volts, at 40 cycles per second, what total current will they take if joined in parallel?

- (a) 18.2 A (b) 35.3 A
 (c) 28.4 A (d) 21.2 A

97. A series LCR circuit containing a resistance of 120Ω has angular resonance frequency $4 \times 10^5\text{ rad. s}^{-1}$. At resonance, the voltages across resistance and inductance are 60 V and 40 V respectively. At what frequency the current in the circuit lags the voltage by 45° ?
 (a) $2.42 \times 10^3\text{ Hz}$ (b) $3.02 \times 10^2\text{ Hz}$
 (c) $1.44 \times 10^3\text{ Hz}$ (d) $3.18 \times 10^4\text{ Hz}$
98. A circular coil of radius 5 cm has 500 turns of a wire. The approximate value of the coefficient of self-induction of the coil will be
 (a) 25 mH (b) $25 \times 10^{-3}\text{ mH}$
 (c) $50 \times 10^{-3}\text{ mH}$ (d) $50 \times 10^{-3}\text{ H}$.
99. An AC source of angular frequency ω is fed across a resistor R and a capacitor C in series. The current registered is I . If now the frequency

of source is changed to $\frac{\omega}{3}$ (but maintaining the same voltage), the current in the circuit is found to be halved. Find the ratio of reactance to resistance at the original frequency ω .

- (a) $\sqrt{2/5}$ (b) $\sqrt{3/5}$
 (c) $\sqrt{5/7}$ (d) None of these

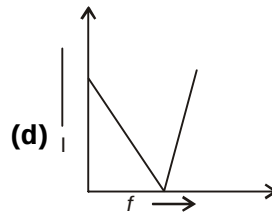
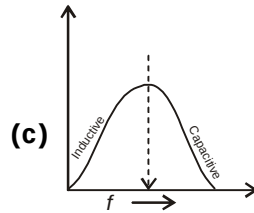
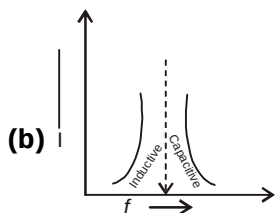
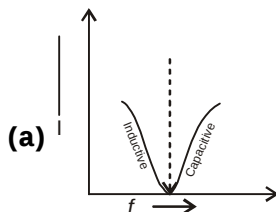
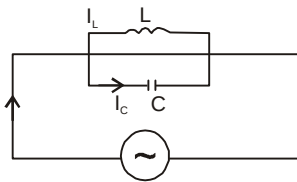
100. In an AC generator, the number of turns in a coil is 2000 and the area of the coil is 0.15 m^2 . "The coil is rotated at a rate of 60 cycles per second in a field of 0.1 T. Find the peak value of the emf induced.

- (a) $1.131 \times 10^4 \text{ V}$ (b) $1.15 \times 10^4 \text{ V}$
(c) $1131 \times 10^4 \text{ V}$ (d) $0.131 \times 10^4 \text{ V}$

101. In a coil an emf of 8V is induced when in 0.5 sec the value of current changes from 2A to 4A. What will be the value of coefficient of self-induction of the coil?

- (a) 0.8 H. (b) 0.1 H.
(c) 0.2 H. (d) 0.4 H.

102. A simple radio-frequency amplifier circuit is taken (as shown in fig.). Which one of the following shows correct variation of current and frequency for net inductive and net capacitive circuit respectively ?



103. The value of current through an inductance of 1H and of negligible resistance when connected through an a.c. source of 200 V and 50 Hz is :

- (a) 3.637 A (b) 0.637 A
(c) 1.637 A (d) 2.637 A

104. The earth's magnetic field (say B) at equator is horizontal, uniform and points north-south. A conducting square loop of side l and resistance R is kept in the vertical plane with two of its sides pointing east-west direction. This loop is moved in east direction with a velocity v. The current induced in the loop is

- (a) $\frac{Bvl}{R}$ (b) $\frac{2Bvl}{R}$
(c) $\frac{4Bvl}{R}$ (d) 0

105. A circular coil of radius 5 cm has 500 turns of a wire. The approximate value of the coefficient of self-induction of the coil will be

- (a) 25 millihenry
(b) 25×10^{-3} millihenry
(c) 50×10^{-3} millihenry
(d) 50×10^{-3} henry.

106. A wire is situated in the east-west

direction and the current flowing through it is 0.5 ampere. The wire is held perpendicular to magnetic field of 0.2×10^{-4} N (amp.-metre). The force acting on the wire will be :

- (a) 0.0 (b) 1×10^{-6}
(c) 1×10^{-5} (d) 4×10^{-5}

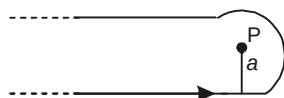
107. A uniform bar is suspended in a horizontal position by a vertical wire attached to its centre. When a torque of 5 N is applied to the bar, the bar is twisted through an angle of 12° . When the bar is released, it oscillates as a torsional pendulum with a period of 0.5 second. The moment of inertia of the bar is

- (a) 0.05 kg m^2 (b) 0.1 kg m^2
(c) 0.15 kg m^2 (d) 0.25 kg m^2

108. When a conductor of length l meter moves with a velocity v m/sec in a direction normal to magnetic induction B , then the induced emf is

- (a) Bvl (b) Zero
(c) $\frac{1}{2} Bvl$ (d) Bvq

109. A current carrying wire has the following shape. a = radius of curved path. Find the magnetic induction at point P.



- (a) $\frac{\mu_0 i}{a} \left(\frac{3}{2} + 1 \right)$ (b) $-\frac{\mu_0 i}{a} \left(\frac{3}{2} + 1 \right)$

- (c) $\frac{\mu_0 i}{4a} \left(\frac{3}{2} + 1 \right)$ (d) None of these

110. A wire carrying current $i = 100$ A is taken. A rod is moved parallel to this wire with a velocity $v = 5$ m/s as shown in the figure. Find the value of induced emf in the rod.

- (a) 2×10^{-2} volt (b) 3×10^{-4} volt
(c) 4×10^{-3} volt (d) None of these

111. A circuit consisting of an ideal inductor (L) and capacitor (C) is connected to a source of emf (E) as shown in fig.



The capacitor is charged for t seconds and then discharged through inductance L , by pressing the key K . This L-C system

(a) executes simple harmonic motion

with frequency $f = \frac{1}{2\sqrt{LC}}$

(b) executes simple harmonic motion

with frequency $f = 2\sqrt{LC}$

(c) executes no oscillations.

(d) shows that frequency of current and charge is not same.

112. A coil has 1,000 turns and 500 cm^2 as its area. The plane of the coil is placed at right angle to a magnetic induction field of 2×10^{-5} web/ m^2 . The coil is rotated through 180° in 0.2 seconds. The average emf induced in the coil in milli-volts is

- (a) 5 (b) 10
(c) 15 (d) 20

113. A solenoid 3.14 m long and of 0.002 m^2 cross-sectional area has 700 turns. Another small solenoid of 50 turns is tightly wound over the longer solenoid. What will be mutual inductance of the two solenoids.

($\mu_0 = 4\pi \times 10^{-7} \text{ Hm}^{-1}$) ?

- (a) 1.8×10^{-4} H (b) 3.3×10^{-2} H
(c) 2.38×10^{-6} H (d) 2.8×10^{-5} H

114. When a wheel with metallic spokes 1.2 m long revolves in a magnetic field of 5×10^{-5} Wbm perpendicular to the plane of wheel, an emf 10^{-2} V is induced across the rim and the axle of the wheel. Find the rate of rotation of the wheel per second.

- (a) 32.2 (b) 44.2
(c) 30.2 (d) None of these

115. A 10 metre wire is kept in east-west direction. It is falling down with a speed of 5.0 m/s perpendicular to the horizontal component of earth's magnetic field of 0.30×10^{-4} Wb/m². What is the momentary potential difference induced between the end of the wires ?

- (a) 1.2 mV (b) 1.6 mV
(c) 2.4 mV (d) 3.2 mV

116. 5.5×10^{-4} magnetic flux lines are passing through a coil of resistance 10 ohm and number of turns 1000. If the number of flux lines reduces to 5×10^{-5} in 0.1 sec, what will be the charge flowing through the coil ?

- (a) 0.02 C (b) 0.01 C
(c) 1.02 C (d) 0.05 C

117. A coil of area 0.04m² having 1000 turns is suspended perpendicular to a magnetic field of 5.0×10^{-5} Wbm⁻². It is rotated through 90° in 0.2 second. Find the average emf induced.

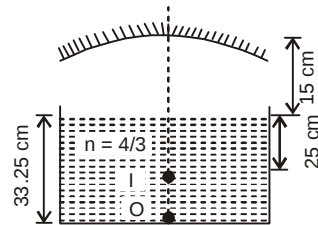
- (a) 1.0 V (b) 0.03 V
(c) 0.05 V (d) 0.5 V

118. Find the self-inductance of an air-red solenoid; 1m long and 0.05 m in diameter having 1400 turns.

- (a) 2.4 mH (b) 3.4 mH
(c) 4.8 mH (d) None of these

119. The adjoining figure shows object O, final image I is formed after two refractions and one reflection is also

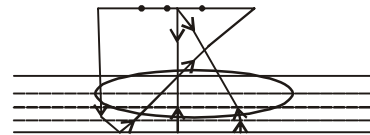
shown in figure.



Find the focal length of mirror (in cm).

- (a) 10 (b) 15
(c) 20 (d) 25

120. An equi-convex lens of refractive index 1.50 in contact with a liquid layer on top of a plane mirror is kept (shown in figure). A small object on the principal axis is moved along the axis until its inverted image is found at the position of the needle. The distance of the object from the lens is measured to be 45.0 cm. The liquid is removed and the experiment is repeated. The new distance is measured to be 30.0 cm. The refractive index of the liquid is



- (a) 1.50 (b) 1.66
(c) 1.33 (d) 1.77

1. If $A = \begin{vmatrix} \sin(\) & \) & \cos(\) & \) & 1 \\ \sin(\) & \) & \cos(\) & \) & 1 \\ \sin(\) & \) & \cos(\) & \) & 1 \end{vmatrix}$, then:

- (a) $A = 0$ q
(b) A is an add function of q
(c) $A = 0$ for $q = a + b + g$
(d) A is independent of q

2. If the line L in the x – y plane and half the slope and twice the y-intercept

of the line $y = \frac{2}{3}x + 4$, then an equation for L is:

(a) $y = \frac{1}{3}x + 8$ (b) $y = \frac{4}{3}x + 2$

(c) $y = \frac{1}{3}x + 4$ (d) $y = \frac{4}{3}x + 4$

3. Find the point on the ellipse $x^2 + 2y^2 = 6$ whose distance from the line $x + y = 7$ is least.

- (a) (2, 1) (b) (1, 2)

(c) (3, 2) (d) (2, 3)

4. If $(1 + x)^n = C_0 + C_1x + C_2x^2 + \dots + C_nx^n$, then $C_0C_2 + C_1C_3 + C_2C_4 + \dots + C_{n-2}C_n$ is equal to:

(a) $\frac{(2n)!}{(n!)^2}$ (b) $\frac{(2n)!}{(n-1)!(n-1)!}$

(c) $\frac{(2n)!}{(n-2)!(n-2)!}$ (d) none of these

5. The digit in the unit place of the number $(183)! + 3^{183}$ is:

MATHEMATICS

- (a) 0 (b) 3
(c) 6 (d) 7

6. If x, y, z are three consecutive positive integers, then

$$\frac{1}{2} \log_e x + \frac{1}{2} \log_e z - \frac{1}{2 \log_e x} - \frac{1}{2 \log_e z} + \dots$$

$\frac{1}{3} \frac{1}{2 \log_e x} + \dots$ is equal to:

- (a) $\log_e x$ (b) $\log_e y$
(c) $\log_e z$ (d) none of these

7. The equation of the normal to the

ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ at the end of the

latus rectum is:

- (a) $x + ey + e^3 a$ (b) $x - ey - e^3 a$
(c) $x - ey - c^2 a$ (d) none of these

8. If $x^6 \sin(5x)^7 dx = \frac{k}{5} \cos(5x^7)$, then:

- (a) $k = 7$ (b) $k = -7$

- (c) $k = \frac{1}{7}$ (d) $k = \frac{1}{7}$

9. A particle moves in a straight line with

a velocity by $\frac{dx}{dt} = x + 1$. (x is the distance described). The time taken by a particle to transverse a distance of 99 metres is:

- (a) $\log_{10} e$ (b) $2 \log_{10} e$

- (c) $\frac{1}{2} \log_{10} e$ (d) $2 \log_{10} 10$

10. Order and degree of the differential

equation $\frac{d^2 y}{dx^2} = y \left(\frac{dy}{dx} \right)^{1/4}$ are:

- (a) 4 and 2 (b) 1 and 2
(c) 1 and 4 (d) 2 and 4

11. The general solution of the differential equation $(1 + \tan y) (dx - dy) + 2x \frac{dy}{dx} = 0$

- (a) $x (\sin y + \cos y) = \sin y + ce^y$
(b) $x (\sin y + \cos y) = \sin y + ce^{-y}$
(c) $y (\sin x + \cos x) = \sin x + ce^x$
(d) none of these

12. The equation $\frac{1}{4} = |\sin x| \left(\frac{\sin x}{1 + \cos x} \right)^{1/4}$

$$dx = 0$$

where l, m, v are constants, given a relation between:

- (a) l, m and v (b) m and v
(c) l and v (d) l and m

13. If $A(t) = \int_t^t e^{|x|} dx$, then $\lim_{t \rightarrow \infty} A(t)$ is equal to:

- (a) 0 (b) 2
(c) -2 (d) 4

14. $\frac{\sin x}{\sin(x-a)} dx$ is equal to:

- (a) $(x-a) \cos a + \sin a \log \sin(x-a) + c$
(b) $\sin(x-a) + \sin x + c$
(c) $(x-a) \cos x + \log \sin(x-a) + c$
(d) $\cos(x-a) + \cos x + c$

15. $\frac{\sin x}{3 + 4 \cos^2 x} dx$ is equal to:

- (a) $\frac{1}{2\sqrt{3}} \tan^{-1} \frac{2 \cos x + 1}{\sqrt{3}} + c$
(b) $\frac{1}{2\sqrt{3}} \tan^{-1} \frac{2 \cos x - 1}{\sqrt{3}} + c$
(c) $\log(3 + 4 \cos^2 x) + c$
(d) $\frac{1}{2\sqrt{3}} \tan^{-1} \frac{\cos x + 1}{\sqrt{3}} + c$

16. The subtangent, ordinate and subnormal to the parabola $y^2 = 4ax$ at a point (different from the origin) are in:

- (a) G.P. (b) A.P.
(c) H.P. (d) none of these

17. The side of an equilateral triangle are increasing at the rate of 2 cm/sec. The rate at which the area increases, when the side is 10 cm is:

- (a) $\sqrt{3}$ sq. units/sec.
(b) 10 sq. units/sec.
(c) $10\sqrt{3}$ sq. units/sec.
(d) $10\sqrt{2}$ sq. units/sec.

18. The points on the curve $y = x^3 - 3x$ at which the normals are parallel to the line $2x + 18y = 9$ are:

- (a) (2, -2) (b) (2, 2)
(c) (2, -2), (-2, 2) (d) (2, 2), (-2, -2)

19. The function f is differentiable with $f(1) = 8$ and $f'(1) = \frac{1}{8}$. If f is invertible and $g = f^{-1}$, then:

- (a) $g'(1) = 8$ (b) $g'(1) = \frac{1}{8}$
(c) $g'(g) = 8$ (d) $g'(g) = \frac{1}{8}$

20. If $\sin(x+y) = \log(x+y)$, then $\frac{dy}{dx}$ is equal to:

- (a) -1 (b) 1
(c) -2 (d) 2

21. Let f and g be differentiable functions satisfying $g'(a) = 2$, $g(a) = 6$ and $f \circ g = 1$ (identity function). Then $f'(b)$ is equal to:

- (a) $\frac{1}{2}$ (b) $\frac{2}{3}$
(c) 2 (d) none of these

22. $\lim_{x \rightarrow \frac{\pi}{2}} \frac{1 - \sin x}{\frac{\pi}{2} - x + \cos x}$ is equal to:

- (a) $\frac{1}{2}$ (b) $\frac{1}{2}$ (c) -1 (d) 1

$$dx = 0$$

where l, m, v are constants, given a relation between:

- (a) l, m and v (b) m and v
(c) l and v (d) l and m

13. If $A(t) = \int_t^t e^{|x|} dx$, then $\lim_t A(t)$ is equal to:

- (a) 0 (b) 2
(c) -2 (d) 4

14. $\frac{\sin x}{\sin(x-a)} dx$ is equal to:

- (a) $(x-a) \cos a + \sin a \log \sin(x-a) + c$
(b) $\sin(x-a) + \sin x + c$
(c) $(x-a) \cos x + \log \sin(x-a) + c$
(d) $\cos(x-a) + \cos x + c$

15. $\frac{\sin x}{3 + 4 \cos^2 x} dx$ is equal to:

- (a) $\frac{1}{2\sqrt{3}} \tan^{-1} \frac{2 \cos x + 1}{\sqrt{3}} + c$
(b) $\frac{1}{2\sqrt{3}} \tan^{-1} \frac{2 \cos x + 1}{\sqrt{3}} + c$
(c) $\log(3 + 4 \cos^2 x) + c$
(d) $\frac{1}{2\sqrt{3}} \tan^{-1} \frac{\cos x + 1}{\sqrt{3}} + c$

16. The subtangent, ordinate and subnormal to the parabola $y^2 = 4ax$ at a point (different from the origin) are in:

- (a) G.P. (b) A.P.
(c) H.P. (d) none of these

17. The side of an equilateral triangle are increasing at the rate of 2 cm/sec. The rate at which the area increases, when the side is 10 cm is:

- (a) $\sqrt{3}$ sq. units/sec.
(b) 10 sq. units/sec.
(c) $10\sqrt{3}$ sq. units/sec.
(d) $10\sqrt{2}$ sq. units/sec.

18. The points on the curve $y = x^3 - 3x$ at which the normals are parallel to the line $2x + 18y = 9$ are:

- (a) (2, -2) (b) (2, 2)
(c) (2, -2), (-2, 2) (d) (2, 2), (-2, -2)

19. The function f is differentiable with f

$f(1) = 8$ and $f'(1) = \frac{1}{8}$. If f is invertible and $g = f^{-1}$, then:

- (a) $g'(1) = 8$ (b) $g'(1) = \frac{1}{8}$
(c) $g'(g) = 8$ (d) $g'(g) = \frac{1}{8}$

20. If $\sin(x+y) = \log(x+y)$, then $\frac{dy}{dx}$ is equal to:

- (a) -1 (b) 1
(c) -2 (d) 2

21. Let f and g be differentiable functions satisfying $g'(a) = 2$, $g(a) = 6$ and $f \circ g = 1$ (identity function). Then $f'(b)$ is equal to:

- (a) $\frac{1}{2}$ (b) $\frac{2}{3}$
(c) 2 (d) none of these

22. $\lim_{x \rightarrow \frac{\pi}{2}} \frac{1 - \sin x}{\frac{1}{2} + \cos x}$ is equal to:

- (a) $\frac{1}{2}$ (b) $\frac{1}{2}$ (c) -1 (d) 1

- (c) $2\left[\frac{s}{a}\frac{r}{b}\frac{r}{c}\right]$ (d) $4\left[\frac{s}{a}\frac{r}{b}\frac{r}{c}\right]$
34. If the unit vectors $\hat{a}$ and $\hat{b}$ are inclined at an angle $2q$ such that $\left|\frac{\hat{r}}{a} - \frac{\hat{r}}{b}\right| = 1$ and $0 < q < \frac{\pi}{2}$, then q lies in the interval:
- (a) $0, \frac{\pi}{6} < \frac{5}{6}, <$ (b) $\frac{\pi}{6}, <$
- (c) $\frac{\pi}{6}, \frac{\pi}{2} <$ (d) $\frac{\pi}{2}, \frac{5}{3} <$
35. If A and B are square matrices of the same order and A is not singular then for a positive integer n $(A^{-1}BA)^n$ is equal to:
- (a) $A^{-n}B^nA^n$ (b) $A^nB^nA^{-n}$
(c) $A^{-1}B^nA$ (d) $(A^{-1}BA)^n$
36. If $I = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$, $I = \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$ and $B = \begin{pmatrix} \cos & \sin \\ \sin & \cos \end{pmatrix}$ then B equals:
- (a) $I \cos q + I \sin q$
(b) $I \sin q + I \cos q$
(c) $I \cos q - I \sin q$
(d) $-I \cos q + I \sin q$
37. The value of I for which the following system of equations does not have solution.
- $$\begin{aligned} x + y + z &= 0 \\ 4x + ly - lz &= 0 \\ 3x + 2y - 4z &= -8 \end{aligned}$$
- (a) 0 (b) 1
(c) -3 (d) 3
38. If $A = \begin{pmatrix} x & 1 \\ 1 & 0 \end{pmatrix}$ and $A^2 = I$, then x is equal to:
- (a) 0 (b) 1
(c) 2 (d) 4
39. ${}^nC_0 + (a+b)C_1 + (a+2b)C_2 + \dots + (a+nb)C_n$ is equal to:
- (a) $(2n+nb)2^n$ (b) $(2a+nb)2^{n-1}$
(c) $(na+2b)2^n$ (d) $(na+2b)2^{n-1}$
40. The first three terms in the expansion of $(1+ax)^n$ ($n \neq 0$) are 1, $6x$ and $16x^2$. Then the values of a and n are respectively.
- (a) 2 and 9 (b) 3 and 2
(c) $\frac{2}{3}$ and 9 (d) $\frac{3}{2}$ and 6
41. Observe the following lists:
- | | |
|--|-----------------------|
| List I | List II |
| (A) A is a matrix such that $A^2 = A$ | (1) Nilpotent matrix |
| (B) A is square matrix such that $A^m = I$ | (2) Involutory matrix |
| (C) A is a square matrix $A^2 = I$ | (3) Symmetric matrix |
| (D) A is a square matrix such that $A^T = A$ | (4) Idempotent matrix |
- The correct match for List I from List II is:
- | | | | | |
|-----|---|---|---|---|
| | A | B | C | D |
| (a) | 1 | 2 | 3 | 4 |
| (b) | 3 | 4 | 2 | 1 |
| (c) | 4 | 3 | 2 | 1 |
| (d) | 4 | 1 | 2 | 3 |
42. Observe the following lists:
- | | |
|---------------------------|--|
| List I | List II |
| (a) $\int_4^5 (x-5)^2 dx$ | $\int_{1/3}^{2/3} e^{9x} x^{\frac{2}{3}} dx$ (1) 0 |
| (b) $\int_2^2 [x] dx$ | (2) 2 p |

(c) $\tan^{-1} \frac{x^2 + 1}{x}$ (3) - 2

$\tan^{-1} \frac{x}{1+x^2}$

(d) The greater of (4) p/2

$\int_0^{1/2} \frac{\sin x}{x} dx$ and $\int_{1/2}^1 \frac{\sin x}{x} dx$

The correct match for List I from List II is:

	A	B	C	D
(a)	1	4	2	3
(b)	1	3	4	2
(c)	1	2	3	4
(d)	1	3	2	4

43. Consider the following statements:

I. $f(x) = \frac{x}{1+|x|}$ is differentiable for $x \in \mathbb{R}$.

II. $f(x) = |x^2 - 5x + 6|$ is not differentiable at $x = 2$.

Which of the above statement is correct?

- (a) only I (b) only II
(c) both I and II (d) neither I and II

Directions: The following FIVE items consists of two statements, one labelled the 'Assertion A' and the other labelled the 'Reason R'. You are to examine these two statements carefully and decide if the Assertion A and Reason R are individually true and if so, whether the reason explanation of the Assertion. Select your answer to these items using the codes given below.

Code:

- (a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is NOT a correct explanation of A.

(c) A is true but R is false

(d) A is false but R is true

44. Assertion (A): Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be a function such that $f(x) = x^3 + x^2 + 3x + \sin x$. Then f is one-one.

Reason (R): $f(x)$ is an strictly increasing function.

Which of the above statement is correct?

- (a) A (b) B
(c) C (d) D

45. Assertion (A): If $\vec{a} \cdot \hat{i} = \hat{j}$ and $\vec{b} \cdot \hat{j} = \hat{k}$, then $(a + b, a - b) = 90^\circ$.

Reason (R): Projection of $\vec{a}$ on $\vec{b}$ is zero.

- (a) A (b) B
(c) C (d) D

46. Assertion (A): The function $f(t) = \frac{1 - \cos(1 - \cos t)}{t^4}$ is continuous every

where then $f(0) = \frac{1}{8}$.

Reason (R): For continuous function

$f(0) = \lim_{t \rightarrow 0} f(t)$.

- (a) A (b) B (c) C (d) D

47. Assertion (A): The circle described on the segment joining the points $(-2, -1)$, $(0, -3)$ as diameter cuts the circle $x^2 + y^2 + 5x + 4 = 0$ orthogonally.

Reason (R): $(-2, -1)$ and $(0, -3)$ are conjugate points w.r. to the circle $x^2 + y^2 + 5x + y + 4 = 0$

- (a) A (b) B (c) C (d) D

48. Assertion (A): The minimum value of the expression $x^2 + 2bx + c$ is $c - b^2$.

Reason (R): The first order derivative of the expression at $x = -b$ is zero.

- (a) A (b) B (c) C (d) D

49. Consider the following statements:

I. $\frac{\sin 5x}{\cos 7x \cos 2x} dx$ is equal to $\frac{1}{7} \log |\sec 7x| \frac{1}{2} \log |\sec 2x| + c$

II. $\sqrt{1 + \sec x} dx$ is equal to $2 \cos^{-1} \sqrt{2} \sin \frac{x}{2} + c$

Which of the above statements is correct?

- (a) only I (b) only II
(c) both I and II (d) neither I nor II

49. Consider the following statements:

I. The area of the triangle formed by

$$1, -\frac{1}{6}, 2, -\frac{1}{3} \text{ and } 2, -\frac{1}{2} \text{ is } 2\sqrt{3}$$

II. The radius of the circle

$$r^2 - 4r(\sqrt{3} \cos \theta - \sin \theta) + 7 = 0$$

is which of the statement is correct:

- (a) only I (b) only II
(c) both I and II (d) neither I nor II

51. If $\vec{a}, \vec{b}, \vec{c}$ are vectors such that $\vec{a} \cdot \vec{b} = \vec{b} \cdot \vec{c} = \vec{c} \cdot \vec{a} = 0$ and $(\vec{a} \times \vec{b}) \cdot \vec{c} = 1$, then $(\vec{a} + \vec{b}) \cdot \vec{c}$ is equal to:

- (a) 0 (b) 1 (c) 2 (d) 3

52. If D, E, F are respectively the mid points of AB, AC and BC in $\triangle ABC$, then $\frac{DE}{BC} \cdot \frac{EF}{AC}$ is equal to:

- (a) $\frac{1}{4}$ (b) $\frac{1}{2}$
(c) $\frac{1}{2}$ (d) $\frac{3}{2}$

53. The line $y = mx + c$ touches the parabola $x^2 = 4ay$ if:

- (a) $c = -am$ (b) $c = \frac{a}{m}$
(c) $c = -am^2$ (d) $c = \frac{a}{m^2}$

54. Maximum area of an isosceles triangle

inscribed in the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ with the vertex at one end of the major axis is:

- (a) $\sqrt{3}ab$ (b) $\frac{3\sqrt{3}}{4}ab$
(c) $\frac{5\sqrt{3}}{4}ab$ (d) none of these

55. The equation of chord joining two points (x_1, y_1) and (x_2, y_2) on the rectangular hyperbola $xy = c^2$ is:

- (a) $\frac{x}{x_1} + \frac{y}{y_1} = 1$
(b) $\frac{x}{x_1} - \frac{y}{y_1} = 1$
(c) $\frac{x}{y_1} + \frac{y}{x_1} = 1$
(d) $\frac{x}{y_1} - \frac{y}{x_1} = 1$

56. If the line joining of foci subtends an angle of 90° at an extremity of minor axis, then eccentricity e is:

- (a) $\frac{1}{\sqrt{6}}$ (b) $\frac{1}{\sqrt{3}}$
(c) $\frac{1}{\sqrt{2}}$ (d) none of these

57. The lengths of the chord joining the points in which the straight line

$$\frac{x}{3} + \frac{y}{4} = 1 \text{ cuts the circle } x^2 + y^2 = \frac{169}{25}$$

is:

- (a) 1 (b) 2
(c) 4 (d) 8

58. Matrix theory was introduced by:

- (a) Newton (b) Calay-Hamilton

- (c) Cauchy (d) Euclid
59. If $q \sin^{-1} x + \cos^{-1} x - \tan^{-1} x$, $x \neq 0$, then the smallest interval in which q lies is:
- (a) $\frac{3}{2}$ (b) 0
(c) $-\frac{3}{4}$ (d) $\frac{3}{4}$
60. The equation $\sin x + \sin y + \sin z = -3$ for $0 \leq x \leq 2\pi$, $0 \leq y \leq 2\pi$, $0 \leq z \leq 2\pi$, has:
- (a) one solution
(b) two sets of solution
(c) four sets of solution
(d) no solution
61. If a, b ($a \neq b$), satisfies the equation $a \cos q + b \sin q = c$, then the value of $\tan \frac{q}{2}$ is :
- (a) $\frac{b}{a}$ (b) $\frac{c}{a}$ (c) $\frac{a}{b}$ (d) $\frac{c}{b}$
62. Convert Binary number 110011011 in decimal system:
- (a) 402 (b) 411 (c) 456 (d) 481
63. If w is a complex root of unity, then the value of $\frac{p}{r} \frac{q}{p} \frac{r}{q} \frac{r^2}{q^2} \frac{p}{q} \frac{q}{r} \frac{r}{p} \frac{r^2}{q^2}$, (p, q, r are real) is equal to
- (a) 0 (b) 1
(c) -1 (d) 2
64. Find the area bounded by the curves $y = |x - 1|$ and $y = 3 - |x|$ is equal to:
- (a) $\frac{1}{2}$ sq. units (b) $\frac{4}{3}$ sq. units
(c) 4 sq. units (d) 2 sq. units
65. Find the condition that the equation $ax^3 + bx^2 + cx + d = 0$ have all roots are equal to:
- (a) $a^3c - b^3d$ (b) $ac^3 - b^3d$
(c) $ac^3 - bd^3$ (d) $a^3c - bd^3$
66. $\sin 47^\circ - \sin 25^\circ + \sin 61^\circ - \sin 11^\circ$ is equal to:
- (a) $\cos 7^\circ$ (b) $\sin 7^\circ$
(c) $2 \cos 7^\circ$ (d) $2 \sin 7^\circ$
67. If a, b, g are the roots of the equation $x^3 + 4x + 1 = 0$ then $(a + b)^{-1} + (b + g)^{-1} + (g + a)^{-1}$ is equal to:
- (a) 2 (b) 3
(c) 4 (d) 5
68. A bag C contains 3 white and 3 black balls and another bag Y contains 4 white and 2 black balls, one bag is selected at random and a ball is drawn from it. Then the probability for the ball chosen be white is:
- (a) $\frac{2}{15}$ (b) $\frac{7}{15}$
(c) $\frac{8}{15}$ (d) $\frac{14}{15}$
69. If $I_n = \frac{d^n}{dx^n} (x^n \log x)$, then $I_n - n I_{n-1}$ is equal to:
- (a) n (b) $n - 1$
(c) $n!$ (d) $(n - 1)!$
70. If $\vec{a}, \vec{b}, \vec{c}$ are three vectors such that $\vec{a} = \vec{b} \times \vec{c}$ and the angle between $\vec{b}$ and $\vec{c}$ is $\pi/2$, then:
- (a) $a^2 = b^2 + c^2$ (b) $b^2 = c^2 + a^2$
(c) $c^2 = a^2 + b^2$ (d) $2a^2 - b^2 = c^2$
71. The greatest of the numbers $1, 2^{1/2}, 3^{1/3}, 4^{1/4}, 5^{1/5}, 6^{1/6}$ and $7^{1/7}$ is:
- (a) $2^{1/2}$ (b) $3^{1/3}$
(c) $7^{1/7}$ (d) all are equal
72. The straight line $x + y - 5 = 0$, $x = 3$ and $y = 3$ form a triangle. The ratio of the sides is:
- (a) $1 : 1 : 1$ (b) $\sqrt{2} : \sqrt{2} : 1$

- (c) $\sqrt{2}:1:1$ (d) $1:2:3$
73. Orthocentre of the triangle formed by joining the points $3, \frac{1}{3}$, $4, \frac{1}{4}$ and $5, \frac{1}{5}$ is:
- (a) $\frac{1}{60}, 60^+$ (b) $\frac{1}{60}, 60^+$
- (c) $\frac{1}{24}, 24^+$ (d) none of these
74. A square matrix can always be expressed as a:
- (a) sum of symmetric matrix and a skew symmetric matrix
- (b) sum of a diagonal matrix and symmetric matrix
- (c) skew matrix
- (d) skew symmetric matrix
75. The solution set of the equation
- $$\begin{vmatrix} 2 & 3 & x \\ 2 & 1 & x^2 \\ 6 & 7 & 3 \end{vmatrix} = 0$$
- is:
- (a) f (b) $\{0, 1\}$
- (c) $\{1, -1\}$ (d) $\{1, -3\}$
76. If $S_r = \begin{vmatrix} 2r & x & n(n-1) \\ 6r^2 & 1 & y & n^2(2n-3) \\ 4r^3 & 2nr & z & n^3(n-1) \end{vmatrix}$, then
- the value of $\sum_{r=1}^n S_r$ is independent of :
- (a) x only (b) y only
- (c) x, y, z, n (d) n only
77. If in the expansion of $(1+x)^n$, coefficient of 2nd, 3rd and 4th terms are in A.P, then x is equal to:
- (a) 5 (b) 6
- (c) 4 (d) 7
78. A parallelogram is cut by two sets of m lines parallel to its sides. The number of parallelograms then formed is:
- (a) $({}^m C_2)^2$ (b) $({}^{m+1} C_2)^2$
- (c) $({}^{m+2} C_2)^2$ (d) none of these
79. The number of ways in which a committee of 6 members can be formed from 8 gentlemen and 4 ladies so that the committee contains at least 3 ladies is:
- (a) 420 (b) 444
- (c) 252 (d) 672
80. If $\frac{a}{1}, \frac{b}{ab}, \frac{b}{1}, \frac{c}{bc}$ are in A.P, then $\frac{a}{b}, \frac{1}{c}$ are in:
- (a) A.P. (b) G.P.
- (c) H.P. (d) none of these
81. If $1), \frac{1}{2}, \frac{2}{3}, \frac{1}{3}, \frac{2}{3}, \frac{3}{4}, \dots$ to n terms is S, then S is equal to:
- (a) $\frac{n(n-3)}{4}$ (b) $\frac{n(n-2)}{4}$
- (c) $\frac{n(n-1)(n-2)}{6}$ (d) n^2
82. If a, b are the roots of the equation $x^2 - ax + b = 0$ and $A_n = a^n + b^n$. Then which of the following is true?
- (a) $A_{n+1} = aA_n + bA_{n-1}$
- (b) $A_{n+1} = bA_n + aA_{n-1}$
- (c) $A_{n+1} = aA_n - bA_{n-1}$
- (d) $A_{n+1} = bA_n - aA_{n-1}$
83. The value of p for which both the roots of the equation $4x^2 - 20px + (25p^2 + 15p - 66) = 0$ are less than 2, lies in:
- (a) (2, ¥) (b) $\frac{4}{5}, 2^+$

(c) $1, \frac{4}{5}$ (d) $(-\frac{4}{5}, -1)$

84. If two towers of heights h_1 and h_2 subtend angles 60° and 30° respectively at the midpoint of the line joining their feet then $h_1:h_2$ is equal to:

(a) 1 : 2 (b) 1 : 3
(c) 2 : 1 (d) 3 : 1

85. If $\cos P = \frac{1}{7}$ and $\cos Q = \frac{13}{14}$, where P and Q both are acute angles. Then the value of $P - Q$ is :

(a) 30° (b) 60°
(c) 45° (d) 75°

86. If $\sec q - \tan q = \frac{a}{a-1}$, then $\cos q$ is equal to:

(a) $\frac{a^2-1}{a^2+1}$ (b) $\frac{a^2-1}{a^2-1}$
(c) $\frac{2a}{a^2+1}$ (d) $\frac{2a}{a^2-1}$

87. The lines $x \cos a + y \sin a = p_1$ and $x \cos b + y \sin b = p_2$ will be perpendicular if:

(a) $a = b$ (b) $|a - b| = \frac{\pi}{2}$
(c) $a = \frac{\pi}{2}$ (d) $a \pm b = \frac{\pi}{2}$

88. If for a variable line $\frac{x}{a} + \frac{y}{b} = 1$, then condition $a^{-2} + b^{-2} = c^{-2}$ (c is constant) is satisfied, then the locus of foot of the perpendicular drawn from the origin to this is:

(a) $x^2 + y^2 = \frac{c^2}{2}$ (b) $x^2 + y^2 = 2c^2$

(c) $x^2 + y^2 = c^2$ (d) $x^2 - y^2 = c^2$

89. If $x = a + b$, $y = aw + bw^2$, $z = aw^2 + bw$, then xyz equals:

(a) $(a+b)^3$ (b) $a^3 - b^3$
(c) $a^3 + b^3$ (d) $(a+b)^3 - 3ab(a+b)$

90. If z_1 and z_2 both satisfy $z + \bar{z} = 2|z - 1|$ and $\arg(z_1 - z_2) = \frac{\pi}{4}$, then the imaginary part of $(z_1 + z_2)$ is:

(a) 0 (b) 1
(c) 2 (d) none of these

91. If the cube roots of unity are 1, w , w^2 , then the roots of the equation $(x-1)^3 + 8 = 0$ are:

(a) $-1, 1+2w, 1+2w^2$
(b) $-1, 1-2w, 1-2w^2$
(c) $-1, -1, -1$
(d) none of the above

92. The average of n numbers $x_1, x_2, x_3, \dots, x_n$ is M . If x_n is replaced by x' , the new average is:

(a) $M - x_n + x'$ (b) $\frac{nM - x_n + x'}{n}$
(c) $\frac{(n-1)M + x'}{n}$ (d) $\frac{M - x_n + x'}{n}$

93. The S.D. of a variate x is s . Then the S.D. of the variate $\frac{ax+b}{c}$, where a, b, c are constant, is:

(a) $\frac{a}{c}$ (b) $\left| \frac{a}{c} \right|$
(c) $\frac{a^2}{c^2}$ (d) none of these

94. The equation of the line through the

points (1, 2, 3) parallel to line $\frac{x-4}{2} = \frac{y-1}{3}$

$= \frac{z-10}{8}$ are:

(a) $\frac{x-1}{2}, \frac{y-2}{3}, \frac{z-3}{8}$

(b) $\frac{x-1}{1}, \frac{y-2}{2}, \frac{z-3}{3}$

(c) $\frac{x-1}{1}, \frac{y-2}{2}, \frac{z-3}{3}$

(d) none of these

95. The equation of the sphere concentric with the sphere $x^2 + y^2 + z^2 - 4x - 6y - 8z = 0$, and which passes through (0, 1, 0) is:

(a) $x^2 + y^2 + z^2 - 4x - 6y - 8z + 1 = 0$

(b) $x^2 + y^2 + z^2 - 4x - 6y - 8z + 5 = 0$

(c) $x^2 + y^2 + z^2 - 4x - 6y - 5z + 2 = 0$

(d) $x^2 + y^2 + z^2 - 4x - 6y - 5z + 3 = 0$

96. If $|a + b| = |a - b|$, then:

(a) a is parallel to b

(b) a is perpendicular to b

(c) $a = \frac{1}{2}$

(d) angle between a and b is $\pi/3$

97. If $\vec{a}, \vec{b}, \vec{c}, \vec{d}$ are non-coplanar, then $\vec{a} + \vec{b} + \vec{c} + \vec{d}$

is equal to:

(a) 0

(b) a, a

(c) bb

(d) (a + b) c

98. If G is the centroid of a triangle ABC, then $\frac{AG}{GA}, \frac{BG}{Gb}, \frac{CG}{GC}$ is equal to:

(a) 0

(b) $\frac{1}{3}GA$

(c) $\frac{1}{3}Gb$

(d) $\frac{1}{3}GC$

99. The shaded region in the given figure is:

(a) $A - (B \cap C)$

(b) $(B \cap C) - A$

(c) $A \cap (B \cap C)$

(d) $A \cap (B \cap C)$

100. If $A = \{(x, y) : x^2 + y^2 = 25\}$ and $B = \{(x, y) : x^2 + 9y^2 = 144\}$ then $A \cap B$ contains:

(a) one point

(b) three points

(c) two points

(d) four points

ANSWERS

GENERAL ABILITY TEST

1. (d)	2. (d)	3. (a)	4. (b)	5. (c)	6. (a)	7. (d)	8. (b)	9. (a)	10. (c)
11. (c)	12. (d)	13. (a)	14. (c)	15. (d)	16. (a)	17. (d)	18. (c)	19. (c)	20. (c)
21. (b)	22. (c)	23. (a)	24. (b)	25. (b)	26. (b)	27. (b)	28. (b)	29. (c)	30. (a)
31. (a)	32. (d)	33. (c)	34. (d)	35. (b)	36. (d)	37. (c)	38. (c)	39. (d)	40. (a)
41. (c)	42. (b)	43. (c)	44. (c)	45. (b)	45. (b)	47. (c)	48. (c)	49. (b)	50. (a)
51. (b)	52. (b)	53. (b)	54. (a)	55. (b)	56. (d)	57. (b)	58. (a)	59. (c)	60. (b)
61. (b)	62. (a)	63. (c)	64. (a)	65. (d)	66. (d)	67. (b)	68. (a)	69. (d)	70. (a)
71. (c)	72. (d)	73. (b)	74. (d)	75. (a)	76. (c)	77. (a)	78. (c)	79. (b)	80. (a)
81. (d)	82. (a)	83. (d)	84. (a)	85. (d)	86. (b)	87. (d)	88. (c)	89. (b)	90. (c)
91. (a)	92. (d)	93. (d)	94. (d)	95. (c)	96. (c)	97. (d)	98. (a)	99. (a)	100. (d)
101. (c)	102. (d)	103. (d)	104. (a)	105. (a)	106. (b)	107. (b)	108. (c)	109. (d)	110. (d)
111. (d)	112. (a)	113. (b)	114. (b)	115. (b)	116. (c)	117. (c)	118. (b)	119. (c)	120. (b)

PHYSICAL SCIENCE

1. (d)	2. (c)	3. (b)	4. (b)	5. (a)	6. (c)	7. (a)	8. (c)	9. (c)	10. (d)
11. (a)	12. (d)	13. (c)	14. (c)	15. (b)	16. (b)	17. (d)	18. (b)	19. (b)	20. (c)
21. (b)	22. (a)	23. (b)	24. (b)	25. (d)	26. (d)	27. (d)	28. (d)	29. (a)	30. (a)
31. (d)	32. (b)	33. (b)	34. (b)	35. (c)	36. (c)	37. (d)	38. (a)	39. (b)	40. (a)
41. (b)	42. (a)	43. (c)	44. (a)	45. (a)	46. (a)	47. (a)	48. (d)	49. (b)	50. (b)
51. (a)	52. (b)	53. (a)	54. (c)	55. (b)	56. (b)	57. (c)	58. (c)	59. (a)	60. (b)
61. (c)	62. (b)	63. (a)	64. (c)	65. (c)	66. (a)	67. (d)	68. (b)	69. (a)	70. (b)
71. (b)	72. (c)	73. (d)	74. (c)	75. (a)	76. (c)	77. (d)	78. (a)	79. (a)	80. (b)
81. (b)	82. (b)	83. (a)	84. (c)	85. (b)	86. (d)	87. (a)	88. (d)	89. (c)	90. (a)
91. (c)	92. (d)	93. (b)	94. (b)	95. (c)	96. (d)	97. (d)	98. (d)	99. (b)	100. (a)
101. (c)	102. (a)	103. (b)	104. (d)	105. (d)	106. (c)	107. (c)	108. (a)	109. (c)	110. (b)
111. (a)	112. (a)	113. (d)	114. (b)	115. (b)	116. (d)	117. (d)	118. (c)	119. (c)	120. (c)

MATHEMATICS

1. (d)	2. (a)	3. (a)	4. (c)	5. (d)	6. (b)	7. (b)	8. (d)	9. (d)	10. (d)
11. (b)	12. (c)	13. (b)	14. (a)	15. (a)	16. (a)	17. (c)	18. (d)	19. (c)	20. (a)
21. (a)	22. (b)	23. (c)	24. (d)	25. (d)	26. (a)	27. (c)	28. (c)	29. (b)	30. (d)
31. (a)	32. (a)	33. (a)	34. (a)	35. (c)	36. (a)	37. (d)	38. (a)	39. (c)	40. (c)
41. (d)	42. (a)	43. (c)	44. (d)	45. (a)	46. (a)	47. (a)	48. (c)	49. (a)	50. (a)
51. (a)	52. (a)	53. (c)	54. (b)	55. (a)	56. (c)	57. (b)	58. (b)	59. (b)	60. (a)
61. (a)	62. (b)	63. (c)	64. (c)	65. (b)	66. (a)	67. (c)	68. (c)	69. (d)	70. (a)
71. (b)	72. (c)	73. (b)	74. (a)	75. (d)	76. (c)	77. (d)	78. (c)	79. (c)	80. (a)
81. (a)	82. (c)	83. (d)	84. (d)	85. (b)	86. (b)	87. (b)	88. (c)	89. (b)	90. (c)
91. (b)	92. (b)	93. (b)	94. (a)	95. (b)	93. (b)	97. (a)	98. (a)	99. (b)	100. (d)