

MOCK TEST PAPER – 2
INTERMEDIATE (IPC): GROUP – II
PAPER –7: INFORMATION TECHNOLOGY AND STRATEGIC MANAGEMENT
SECTION – A: INFORMATION TECHNOLOGY
SUGGESTED ANSWERS/HINTS

1. (i) **Meta Data:** Meta data is “data about data”, which is used to inform operators and users of the data warehouse about its status and the information held within the data warehouse. The most recent date for loading data, the business meaning of a data item and the number of users that are logged in currently are examples of metadata.
- (ii) **Transaction Log:** A transaction log is a file that records database modifications such as insert, update, delete, commit, rollback and database schema changes. The database engine uses a transaction log to apply any changes made between the most recent checkpoint and the system failure.
- (iii) **Mirror Log:** A mirror log is an optional file that has a file extension .mlg. It is a copy of a transaction log which provides additional protection against the loss of data in the event of the transaction log becoming unusable.
- (iv) **DNS Server:** Domain Name Service (DNS) Server is an Internet-wide distributed database system that documents and distributes network specific information such as the associated IP address for a host name, and vice-versa. The host, storing this database is a DNS server.
- (v) **Multi-tasking:** This refers to the Operating System's ability to execute two or more tasks of a single user, concurrently. Multiple tasks are executed by the CPU switching between them. This is accomplished through foreground/background processing. In this method, the CPU time is shared by different processes.
- (vi) **VPDN:** VPDN (Virtual Private Dial-Up Network) is a user-to-LAN connection used by a company that has employees, who need to connect to the private network from various remote locations.
- (vii) **Uniform Resource Locators (URL):** A URL is the unique address for a file that is accessible on the Internet and are used to address and access individual web pages and internet resources. The format of URL is protocol / internet address / web page address.
- (viii) **Intranet:** It is a type of information system that facilitates communication within the organization among widely dispersed departments, divisions and regional locations. Intranet connects people together with Internet technology using Web browsers, Web servers and Data warehouses in a single view.

- (ix) **Wi-Fi:** It stands for Wireless Fidelity that describes the underlying technology of wireless local area network based on IEEE 802.11 specifications. It is used for mobile computing devices, Internet and VOIP phone access, gaming applications, consumer electronics, public transports and mobile commerce etc.
- (x) **Assembler:** It refers to a computer program that translates programs written in symbolic coding to produce machine language programs.

2. (a) **Star Network Topology**

The geometrical arrangement of computer resources, remote devices and communication facilities is known as Network Structure or Network Topology. Star Network topology is characterized by communication channels emanating from centralized computer system as shown in figure given below:

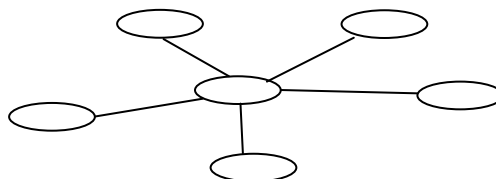


Fig: Star Network Topology

The processing nodes in a star network interconnect directly with a central system. Each terminal, small computer or large main frame can communicate only with the central site and not with other nodes in the network. If it is desired to transmit information from one node to another, it can be done only by sending the details to the central node, which in turn sends them to the destination.

Advantages:

- It is easy to add new and remove nodes.
- A node failure does not bring down the entire network.
- It is easier to diagnose network problems through a central hub.

Disadvantages:

- If the central hub fails, the whole network ceases to function.
- It costs more to cable a star configuration than other topologies.

- (b) Electronic commerce is the process of doing business electronically. It involves the automation of a variety of B2B and B2C transactions through reliable and secure connections. It is a composite of technologies, processes and business strategy that foster the instant exchange of information within and between organizations. It strengthens relationship with buyers, makes it easier to attract new customers, improves customer responsiveness and opens new markets on global scale.

The Internet provides an inexpensive and information- rich, shared multimedia network technologies and make a dramatic impact on the scope of E-commerce. They are as follows:

- ◆ **Universality:** Any business using the Internet can interact with any other business using the Internet.
- ◆ **Reach:** The Internet is everywhere: large cities and small towns throughout the modern and developing world.
- ◆ **Performance:** The Internet provides its users with a high-function window to the world, in addition to handling day-to-day networking tasks such as electronic mail; and visual images, audio clips and other large electronic objects.
- ◆ **Reliability:** Internet technology is highly robust and reliable as the design concepts for it came out of the U.S. Department of Defence.
- ◆ **Cost:** Internet costs are lower as compared to the alternative networking technologies.
- ◆ **Momentum:** Tens of millions of individuals are already connected to the Internet and business use is increasing at a dramatic rate.

3. (a) The operating system may be defined as an integrated system of programs, which supervises the operation of the CPU, controls the input/output functions of the computer system, translates the programming languages into the machine languages and provides various support services.

There are six basic functions that an operating system can perform. These are given as under:

- (i) **Schedule Jobs:** Operating systems can determine the sequence in which jobs are executed, using priorities established by the organization.
- (ii) **Manage Hardware and Software Resources:** Operating systems cause the user's application program to be executed by loading it into primary storage and then cause the various hardware units to perform as specified by the application.
- (iii) **Maintain System Security:** They may require users to enter a password - a group of characters that identifies users as being authorized to have access to the system.
- (iv) **Enable Multiple User Resource Sharing:** They can handle the scheduling and execution of the application programs for many users at the same time, a feature called multiprogramming.
- (v) **Handle Interrupts:** An interrupt is a technique used by the operating system to temporarily suspend the processing of one program in order to allow another

program to be executed. Interrupts are issued when a program requests an operation that does not require the CPU, such as input or output, or when the program exceeds some predetermined time limit.

- (vi) **Maintain Usage Records:** Operating systems can keep track of the amount of time used by each user for each system unit - the CPU, secondary storage, and input and output devices.

(b) Various reporting tools available in Data Warehouse are given as follows:

- ◆ **Business Intelligence tools:** These are software applications that simplify the process of development and production of business reports based on warehousing data.
- ◆ **Executive Information System tools:** These are software applications that are used to display complex business metrics and information in a graphical way to allow rapid understanding of the overall process.
- ◆ **Online Analytical Processing (OLAP) tools:** They form data into logical multi-dimensional structures and allow users to select dimensions to view data.
- ◆ **Data Mining tools:** They are software that allows users to perform detailed mathematical and statistical calculations on detailed warehousing data to detect trends, identify patterns and analyze data.

4. (a) A decision table is divided into four parts:

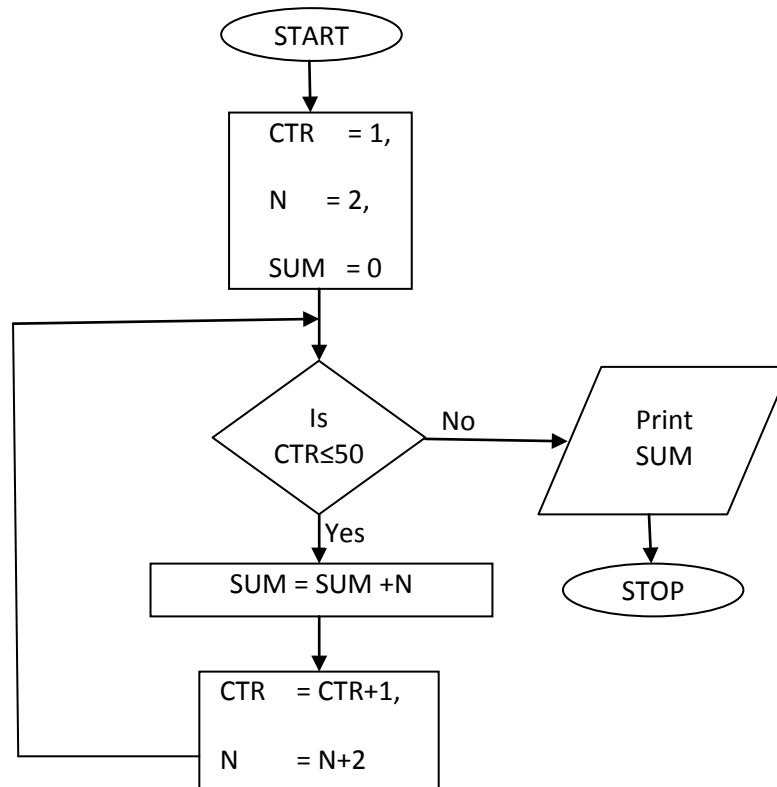
- (i) **Condition Stub:** It comprehensively lists the comparisons and conditions.
- (ii) **Action Stub:** It comprehensively lists the actions to be taken along the various program branches.
- (iii) **Condition entries:** They enable to list in its various columns the possible permutations of answers to the questions in the condition stub.
- (iv) **Action entries:** They enable to list in its various columns corresponding to the conditions entries the actions contingent upon the set of answers to questions of that column.

(b) There are three major data transmission modes, which are given as follows:

- (i) **Simplex:** A simplex communication mode permits data to flow in only one direction. A terminal connected to such a line is either a send-only or receive only device. Simplex mode is seldom used because a return path is generally needed to send acknowledgements, control or error signals.
- (ii) **Half duplex:** In this mode, data can be transmitted back and forth between two stations, but data can only go in one of the two directions at any given point of time.

- (iii) **Full duplex:** A full duplex connection can simultaneously transmit and receive data between two stations. It is most commonly used communication mode. A full duplex line is faster, since it avoids the delay that occurs in a half-duplex mode each time the direction of transmission is changed.

5. The required flowchart is drawn in the following figure:



6. (a) The factors, which must be considered in determining the best file organization for a particular position are given as follows:

- ◆ **File Volatility:** It refers to the number of additions and deletions to the file in a given period of time. A file that constantly keeps changing is a highly volatile file. An Indexed-sequential file organization will not be suitable for such files, because additions have to be placed in the overflow area and constant reorganization of the file would have to occur. Other direct access methods would be a better choice. Even the sequential file organization could be appropriate if there are no interrogation requirements.
- ◆ **File Activity:** It is the proportion of master file records that are actually used or accessed in a given processing run. At one extreme is the real-time file, where each transaction is processed immediately and hence at a time, only one

master record is accessed. This situation obviously requires a direct access method. At the other extreme is a file, such as a payroll master file, where almost every record is accessed when the weekly payroll is processed. In such case, a sequentially ordered file would be more efficient.

- ◆ **File Interrogation:** It refers to the retrieval of information from a file. When the retrieval of individual record needs to be fast to support a real-time operation such as airline reservation, then some direct organization would be required. But if requirements of data can be delayed, then all the individual requests or information can be batched and run in a single processing run with a sequential file organization.
- ◆ **File Size:** Large files that require many individual references to records with immediate response must be organized for certain direct access method. However, with small files, it may be more efficient to search sequentially or with more efficient binary search, to find an individual record.

(b) Important characteristics of Client / Server Technology are given as follows:

- It consists of a client process and a server process that can be distinguished from each other.
- The client portion and the server portion can operate on separate computer platforms.
- Either the client or the server platform can be upgraded without having to upgrade the other platform.
- The server is able to service multiple clients concurrently.
- The system includes some sort of networking capability.
- A significant portion of the application logic resides at the client end.
- Action is usually initiated at the client end and not the server end.
- A user-friendly Graphical User Interface (GUI) generally resides at the client end.
- A Structured Query Language (SQL) capability is available to client server system.
- Database server provides data protection and security.

7. (a) **Dependent Data Mart:** A dependent data mart is a physical database stored (in either same or different hardware platform) that receives all its information from the data warehouse. It is a subset of Data Warehouse. The purpose of a data mart is to provide a sub-set of the warehousing data for a specific purpose or to a specific sub-group of the organization. Data Mart may or may not be dependent or related to other data mart in a single organization. They are usually built to achieve improved performance and availability, better control, and lower telecommunication costs resulting from local access of data relevant to a specific department.

- (b) **Online Backup:** Data base back-up can be performed while the database is being actively accessed (online). It is performed by executing the command-line or from the 'Backup Database' utility. When this process begins, the database engine externalizes all cached data pages kept in memory to the database file(s) on disk. This process is called a checkpoint. The database engine continues recording activity in the transaction log file while the database is backed up. The log file is backed up after the backup utility finishes backing up the database.
- (c) **Mobile Commerce (m-Commerce):** This is the buying and selling of goods and services through wireless handheld devices such as cellular phones and personal digital assistants (PDAs). Mobile Commerce enables users to access the Internet without needing to find the place to plug in. In order to exploit the m-commerce market potential, manufacturers are working to develop wireless application protocol (WAP) enabled smart phones and ways to reach them. Using Bluetooth technology, smart phones offer fax, e-mail and phone capabilities all in one, paving the way for m-commerce to be accepted by an increasingly mobile workforce. As content delivery over wireless devices becomes faster, more secure and scalable, m-commerce will surpass wire line e-commerce as the method of choice for digital commerce transactions.
- (d) **Primary Key:** The primary key of any table is any candidate key of that table, which the database designer arbitrarily designates as "primary". The primary key may be selected for convenience, comprehension, performance, or any other reasons. It is entirely proper to change the selection of primary key to another candidate key. Following diagram shows the examples of Primary Keys:

Enrollment	
student	class
PK	

Enrollment		
student	class	row id
		PK

- (e) **Circuit Switching:** A Circuit Switching network is one that establishes a fixed bandwidth circuit (or channel) between nodes and terminals before the users may communicate, as if the nodes were physically connected with an electrical circuit. In circuit-switching, this path is decided upon before the data transmission starts. The system decides on which route to follow, based on a resource-optimizing algorithm, and transmission goes according to the path. For the whole length of the communication session between the two communicating bodies, the route is dedicated and exclusive, and released only when the session terminates.

Circuit switching is what most of us encounter on our home phones. We place a call and either get our destination party or encounter a busy signal; we cannot transmit any message. A single circuit is used for the entire duration of the call.

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SECTION – B: STRATEGIC MANAGEMENT
SUGGESTED ANSWERS/HINTS

- 1 (a) A strategy is formed on the basis of certain assumptions or premises about the complex and turbulent organizational environment. Over a period of time these premises may not remain valid. Premise control is a tool for systematic and continuous monitoring of the environment to verify the validity and accuracy of the premises on which the strategy has been built. It primarily involves monitoring two types of factors: environmental factors such as economic, social and regulatory and industry factors such as competitors and suppliers. It is neither feasible nor desirable to control all types of premises in the same manner.
- (b) Liquidation as a form of retrenchment strategy is considered as the most extreme and unattractive. It involves closing down a firm and selling its assets. It is considered as the last resort because it leads to serious consequences such as loss of employment for workers and other employees, termination of opportunities a firm could pursue, and the stigma of failure. The company management, government, banks and financial institutions, trade unions, suppliers, creditors, and other agencies are extremely reluctant to take a decision, or ask, for liquidation.
- (c) Yes, like profit making organizations, non-profit organizations must also have strategies. They are required to give them direction, focus and help them in efficient utilization of resources. In many non-profit organizations surpluses are important for their survival and growth. Compared to for-profit firms, non-profit and governmental organizations often function as a monopoly and are dependent on outside financing. Having strategies become important as they are often constrained of resources and need to allocate and use them in an optimum manner. They provide an excellent vehicle for generating funds and delivering the desired products and services.
- (d) Identifying an organisation's existing vision, mission, objectives are the starting point for any strategic management process. Determining vision and mission provides long-term direction, delineate what kind of enterprise the company is trying to become and infuse the organisation with a sense of purposeful action.
- (e) Augmented marketing refers to deliberate and accelerated efforts to get better marketing returns through additional means. It includes provision of additional customer services and benefits built around the care and actual products that relate to introduction of hi-tech services like movies on demand, on-line computer repair services, secretarial services, etc. Such innovative offerings provide a set of benefits that promise to elevate customer service to unprecedented levels.

2. (a) (i) **Incorrect:** Efficiency pertains to designing and achieving suitable input output ratios of funds, resources, facilities and efforts whereas effectiveness is concerned with the organization's attainment of goals including that of desired competitive position. While efficiency is essentially introspective, effectiveness highlights the links between the organization and its environment. In general terms, to be effective is to do the right things while to be efficient is to do things rightly.
- (ii) **Correct:** The thrust of operational control is on individual tasks or transactions as against total or more aggregative management functions. For example, procuring specific items for inventory is a matter of operational control, in contrast to inventory management as a whole. One of the tests that can be applied to identify operational control areas is that there should be a clear-cut and somewhat measurable relationship between inputs and outputs which could be predetermined or estimated with least uncertainty.
- (b) (i) A joint venture is a business agreement in which parties agree to develop, for a finite time, a new entity and new assets by contributing equity. They exercise control over the enterprise and consequently share revenues, expenses and assets.
- (ii) Competitive advantage is the result of a strategy capable of helping a firm to maintain and sustain a favourable market position. This position is translated into higher profits compared to those obtained by competitors operating in the same industry.
- (iii) Outbound logistics relate to collection, storage and distribution of the product to customers. It includes all activities such as storage/warehousing of finished goods, order processing, scheduling deliveries, operation of delivery vehicles, etc.
3. (a) A global strategy assumes more standardization of products across country boundaries. Under this strategy, the company tries to focus on a low cost structure by leveraging their expertise in providing certain products and services and concentrating the production of these standard products and services at a few favourable locations around the world. Competitive strategy is centralized and controlled by the home office.
- (b) Corporate culture refers to a company's values, beliefs, business principles, traditions, ways of operating and internal work environment. Every corporation has a culture that exerts powerful influences on the behaviour of managers.
- (c) Value chain analysis refers to separate activities which are necessary to underpin an organization's strategies and are linked together both within and around the organization. Organizations are much more than a random collection of machines,

money and people. Value chain of a manufacturing organization comprises of primary and supportive activities.

4. The model has been used by General Electric Company (developed by GE with the assistance of the consulting firm McKinsey & Company) known as “Stop-Light” Strategy Model. This model is also known as Business Planning Matrix, GE Nine-Cell Matrix and GE Model. The strategic planning approach in this model has been inspired from traffic control lights. The lights that are used at crossings to manage traffic are: green for go, amber or yellow for caution, and red for stop. This model uses two factors while taking strategic decisions: Business Strength and Market Attractiveness. The vertical axis indicates market attractiveness and the horizontal axis shows the business strength in the industry. The market attractiveness is measured by a number of factors like:

- ◆ Size of the market.
- ◆ Market growth rate.
- ◆ Industry profitability.
- ◆ Competitive intensity.
- ◆ Availability of Technology.
- ◆ Pricing trends.
- ◆ Overall risk of returns in the industry.
- ◆ Opportunity for differentiation of products and services.
- ◆ Demand variability.
- ◆ Segmentation.
- ◆ Distribution structure (e.g. retail, direct, wholesale) etc.

Business strength is measured by considering the typical drivers like:

- ◆ Market share.
- ◆ Market share growth rate.
- ◆ Profit margin.
- ◆ Distribution efficiency.
- ◆ Brand image.
- ◆ Ability to compete on price and quality.
- ◆ Customer loyalty.
- ◆ Production capacity.
- ◆ Technological capability.
- ◆ Relative cost position.
- ◆ Management calibre, etc.

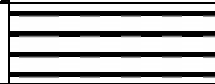
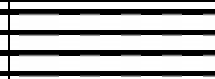
		Business Strength		
		Strong	Average	Weak
Market Attractiveness	High			
	Medium			
	Low			

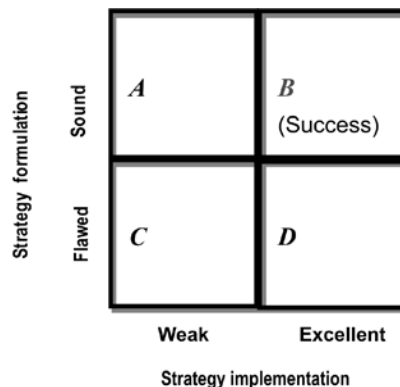
Figure: The GE Portfolio Matrix

<u>Zone</u>	<u>Strategic Signals</u>
Green	Invest/Expand
Yellow	Select/Earn
Red	Harvest/Divest

If a product falls in the green section, the business is at advantageous position. To reap the benefits, the strategic decision can be to expand, to invest and grow. If a product is in the amber or yellow zone, it needs caution and managerial discretion is called for making the strategic choices. If a product is in the red zone, it will eventually lead to losses that would make things difficult for organisations. In such cases, the appropriate strategy should be retrenchment, divestment or liquidation.

5. Strategic implementation is concerned with translating a strategic decision into action, with presupposes that the decision itself was made with some thought being given to feasibility and acceptability.

It is crucial to realize the difference between strategy formulation and strategy implementation because they both require very different skills. Also, a company will be successful only when the strategy formulation is sound and implementation is excellent. There is no such thing as successful strategic design. This sounds obvious, but in practice the distinction is not always made. The matrix in the figure below represents various combinations of strategy formulation and implementation:



6. The critical elements of six sigma can be put into six themes as follows:

Theme one – genuine focus on the customer: Companies launching six sigma often find that how little they really understand their customers. In six sigma, customer focus becomes the top priority. Six sigma improvements are defined by their impact on customer satisfaction and value.

Theme two – data and fact-driven management: Six sigma takes the concept 'of "management by fact" to a new, more powerful level. Despite the improvements in recent years, many business decisions are still being based on opinions, assumptions and gut feeling. Six sigma disciplines begins by clarifying what measures are key to gauging business performance and then gathers data and analyzes key variables. Problems are effectively defined, analyzed, and resolved.

Theme three – processes are where the action is: For designing products and services, measuring performance, improving efficiency and customer satisfaction, six sigma positions itself as a key vehicle of success. Process may relate to build competitive advantage in delivering value to customers.

Theme four – proactive management: In simple terms, being proactive means acting in advance of events rather than reacting to them. In the real world, though, proactive management means making habits out of what are, too often, neglected business practices: defining ambitious goals and reviewing them frequently, setting clear priorities, focusing on problem prevention rather than fire-fighting. Far from being boring or overly analytical, being truly proactive is a starting point for creativity and effective change.

Theme five – boundaryless collaboration: The opportunities available through improved collaboration within companies and with vendors and customers are huge. Billions of dollars are lost every day because of disconnects and outright competition between groups that should be working for a common cause: providing value to customers.

Theme six – drive for perfection, tolerate failure: Organizations need to make efforts to achieve perfection and yet at the same time tolerate failure. In essence, though, the two ideas are complementary. No company will get even close to six sigma without launching

new ideas and approaches - which always involve some risk. Six sigma cannot be implemented by individuals who are overly cautious and are scared of making mistakes.

7. Porter's five-forces model of competition is a popular tool for systematically diagnosing significant competitive pressures in market. The model holds that the state of competition in an industry is a composite of competitive pressures operating in five areas of the overall market:

1. *Threat of new entrants*: New entrants are always a powerful source of competition. The new capacity and product range they bring in throw up new competitive pressure. Bigger the new entrant, the more severe is the competitive effect.
2. *Bargaining power of customers*: This force becomes heavier depending on the possibilities of the buyers forming groups – formal or informal and exert pressure. The bargaining power of the buyers influences not only the prices that the producer can charge but also influences in many cases, costs and investments of the producer.
3. *Bargaining power of suppliers*: Quite often suppliers, too, exercise considerable bargaining power over companies. The more specialised the offering from the supplier, greater is his clout. And, if the suppliers are also limited in number they stand a still better chance to exhibit their bargaining power.
4. *Rivalry among current players*: The rivalry among existing players is quite obvious. This is what is normally understood as competition. For any player, the competitors influence strategic decisions at different strategic levels. The impact is evident more at functional level in the prices being changed, advertising, and pressures on costs, product and so on.
5. *Threats from substitutes*: Substitute products are a latent source of competition in an industry. In many cases they become a major constituent of competition. Substitute products offering a price advantage and/or performance improvement to the consumer can drastically alter the competitive character of an industry.

The five forces together determine industry attractiveness/profitability. This is so because these forces influence the causes that underlie industry attractiveness/profitability. The collective strength of these five competitive forces determines the scope to function and earn attractive returns.