
INTERNATIONAL FINANCIAL MANAGEMENT

Introduction

In the increased competitive world, the objective of reduction in cost and maximization of wealth cannot be overlooked / undermined, even if business is done across the borders. Geography is transformed into history in the web enabled commercial world. But the requirement of being efficient will not be lost at any point of transformation. Expert knowledge in international financial management is a *sine quo non* to the successful running of business, as knowledge is always power. Let us make a small beginning.

Direct Quote

Direct quotation is the one where so many units of local currency are given in terms of one unit of foreign currency. Example $1\$ = \text{Rs.}46$. Compare a domestic situation wherein One kilo of Brinjal is priced for Rs.12.50. Foreign currency is akin to a commodity say, 1 kilogram of Brinjal - both have price.

Indirect Quote

Indirect quotation is the one where so many units of foreign currency are given in terms of one unit or fixed number of units of local currency. Example $\text{Rs}100 = \$2.1739$. For Rs.100 how many kilograms of Brinjal can be procured? The answer is 8 Kilograms of Brinjal. $\{\text{Rs.}100/12.50\}$

Presently Direct quotes are in vogue except in England where indirect quotes are used.

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Two way quotes

Markets, as anybody understands the place where vendors quote the price of the commodity and the buyer bargains before a deal is struck. Wherein in the following markets, participants would both buy as well as sell. Remember, every TV news channel gives time slots for the three important items. They are gold market, share market and foreign exchange market. A user in these markets can buy as well sell the product. Hence the dealer who is more organized in the market quote prices, one for buying and the other for selling. The buying price is referred to as **bid rate** and the selling price is referred to as **offer rate** or **ask rate**. The dealers buying rate is the rate used for buying foreign currency from the customers (for the customers it is the selling rate). The dealers selling rate is the rate used for selling foreign currency to the customers (for the customers it is the buying rate). (For any inquiry or admission to kalpesh classes dial 2382 0676)

The bid rate will be normally lower than the offer rate. The difference between the two is referred to as **spread**. The spread is also expressed in terms of percentage on the offer rate. That is $\text{spread}/\text{offer rate} * 100$.

Inverting quotes

Direct quotes can be converted to indirect quotes and vice versa is also possible. Two-way quotes can also be expressed exactly in the opposite way by inverse operation. That is $1/\text{offer rate}$ of a direct quote becomes bid rate of an indirect quote. Similarly $1/\text{bid rate}$ of a direct quote becomes offer rate of an indirect quote. This inverse operation helps to find **cross rates** where quotation is not available between two currencies. That is when INR/FFr is not available, we shall use INR/\$, \$/L and L/FFr. This may involve use of 2 or more quotations.

Arbitrage

Arbitrage involves buying and selling a same currency in two different markets for gain. It is a speculative action on the part of the authorized dealers. In a well-informed market, it is not at all possible. Though academic interest is shown by many authors on this subject, it cannot be ruled out totally.

**BRIEF TIME TABLE FOR NOVEMBER 2005 C.A. FINAL EXAMINATION.
SUBJECT : DIRECT TAX**

EXAMINATION	BRANCH	COMMENCING	ADMISSION STATUS
NOV 2005 (A.Y. 2005-2006)	ANDHERI	19-07-2005	In Progress
NOV 2005 (A.Y. 2005-2006)	CHARNI ROAD	24-05-2005	In Progress
NOV 2005 (A.Y. 2005-2006)	GHATKOPAR	17-07-2005	In Progress

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Course Coverage for all the branches is the same.
All lectures are conducted by Professor Mr.Kalpesh Sanghavi Only.

Spot Rate

The rate used by the authorized dealers in immediately settling the transactions. Practically not more than two days will take to complete the transactions when dealt on spot rate. TT (Telegraphic Transfer) rate is the rate prevailing on the date of the dealing of transactions. However TT rates are used widely by the bankers/authorized dealers *interse*.

Forward Rate

It is possible to buy/sell currencies for transaction (delivery) at an agreed future dates usually 1 month, 3 months or 6 months later from the date of the transaction. This rate is referred to as Forward Rate. It is a sort of a binding between the authorized dealer and the customer for taking/giving delivery of a foreign currency on a future date. Such forward rates are quoted either on outright basis or with the help of swap points. The decimal expression (normally 4 decimal expression is a standard form) is called swap points.

Premium and Discount

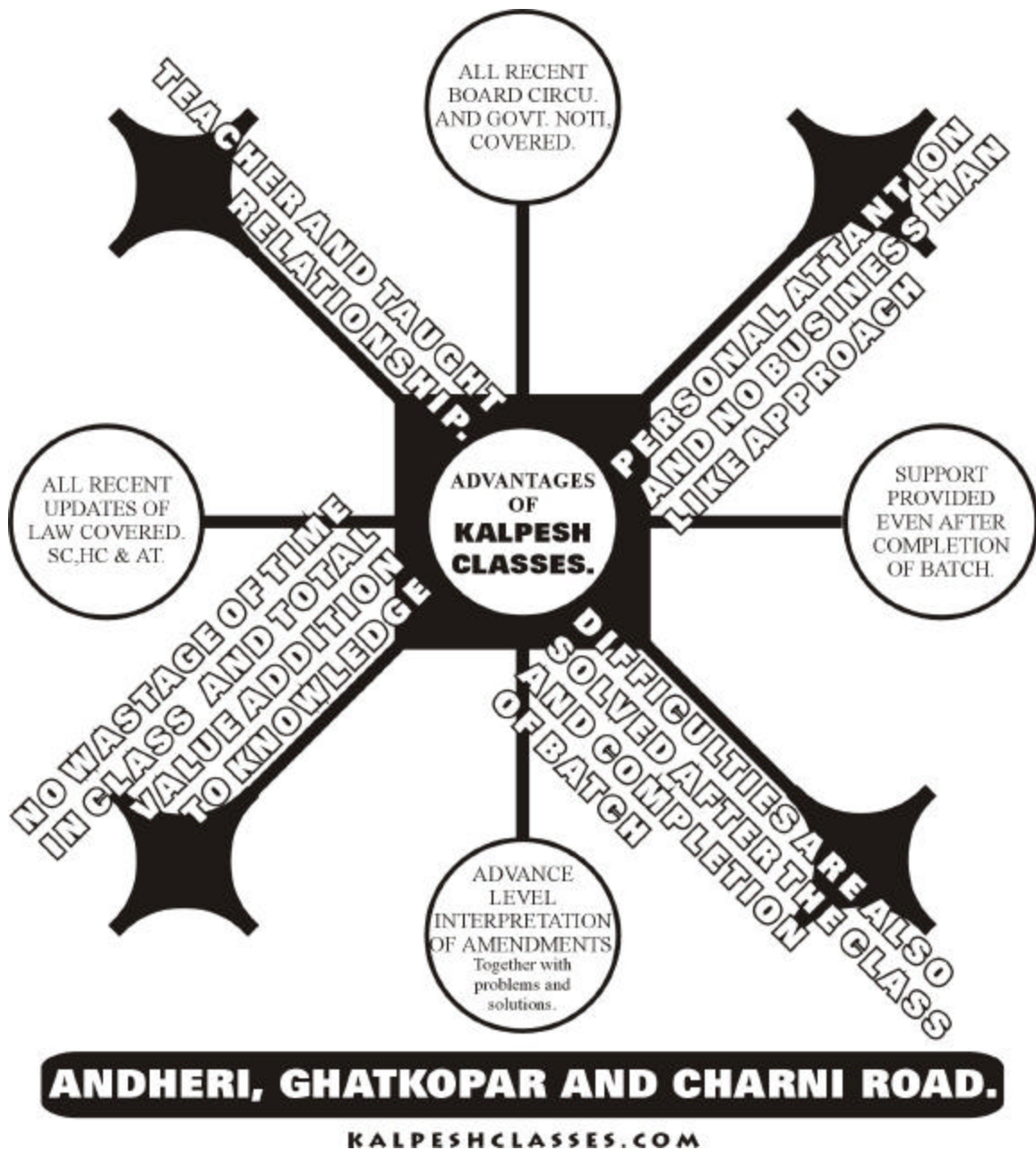
Finding as which currency is at premium and discount requires careful understanding. Take INR spot at 46.62 against 1\$, 6 months forward quote is 47.60 against 1 \$. It is very easy to say that INR is at discount and \$ at premium, because higher local currency is being matched against the same quantity of foreign currency in the forward market. Any commodity paid at a greater rate in the future is considered as quoted at premium and vice versa is also true. The direct quote expression can be restated on indirect quote basis as spot 1 INR = \$0.0215 (1/46.62) and 6 months forward as \$0.0210 (1/47.60). It is very easy to understand that INR is at discount.

If the swap points are in the ascending scale (low-high), the quotation is at premium or else {descending – (high-low)} at discount. To arrive at forward rates, Premium (swap) points are to be added to the spot rate and discount (swap) points are to be subtracted from the spot rate. The premium/discount are expressed in terms of annualized percentage. The formula is $(\text{Forward rate} - \text{Spot rate}) / \text{Spot rate} * 12/n * 100$. (Where n stands for the number of months).

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Interest Rate Parity

There are many theories on, what influences the forward rate (premium/discount). It is believed that interest rate of two countries influences the forward rate and swap points. Interest rate parity illustrates why a particular currency might be at a forward discount/premium. It is also important to note that a currency is at a forward premium whenever domestic interest rate is higher than foreign interest rate. Discounts prevail if domestic interest rate is lower than foreign interest rate.

A firm should be indifferent about investing at home or investing abroad if the home interest rate equals the foreign interest rate plus the annualized forward exchange premium/discount on the foreign currency.

Similarly the firm should invest at home when the domestic interest rate exceeds the sum of the foreign interest rate plus the foreign exchange premium/discount, and it should invest abroad when the domestic rate is less than this sum. It is understood that mere comparison of interest is not sufficient. Hence one should compare the interest rates differentials with the forward premium/discount rates to find where investments should be made for gain. Chances are many for speculators cashing on the interest rate differentials, for gain. This is technically referred to as **covered interest arbitrage**.

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This discussion brings **a rule** for arbitrage as follows: - **First Rule**

If interest rate differential (IRD) is greater than the premium/discount (annualized) rates, then invest in the currency bearing higher rate of interest and converse is also true.

If interest rate differential (IRD) is lower than the premium/discount (annualized) rates, then invest in the currency bearing lower rate of interest.

This discussion brings **yet another rule** for arbitrage as follows:- **Second Rule**

Domestic rate < Foreign rate + or- Forward Premium/Discount rates invest in foreign country. (We have teacher and taught relation ship and no business man like approach.)

Domestic rate > Foreign rate +or- Forward Premium/Discount rates invest in domestic country. (For any inquiry or admission to kalpesh classes dial 2382 0676)

A refined approach to covered interest arbitrage is attempted in the following manner. Instead of summing or reducing the premium/discount in annualized percentage with the annual interest rates of the economies, they are to be multiplied with adjusted premium/discount factors. For example if the forward dollar is at premium of 5%, then it shall be taken as 105% on the interest rate of US. If the dollar is at discount in the forward by 5%, then the interest rate of US shall be multiplied by 95%

Purchasing Power Parity

Forward rates are also believed to be influenced by the law of one price. This law says that a commodity will be priced the same regardless of the country in which it is purchased/sold. Based on the purchasing power of the consumers in the countries, the exchange rates are influenced. The purchasing power is once again dependent on the inflation rate plaguing the countries. (To know more about us visit KalpeshClasses.com)

Expectation Theory

Forward rate and expected future spot rate are two different things to be understood. Forward rate is the rate negotiated for the delivery to be made / taken on a future date for a present transaction. Future spot rate is the actual rate prevailing on the agreed future date. An equilibrium is achieved only when the forward (premium/discount) points equal to the expected change in the future spot rate. However it generally overshoots one way or the other.

Fisher's Inflation and Real Interest rate Theory

Relative inflation rates also affect interest rates. The interest rate of one country is largely dependent on the inflation rates. Hence countries suffering higher inflation would experience higher interest rates and vice versa is also true. If two countries experience same inflation rates would experience same interest rates. This in union with Fisher effect would mean that the difference in money rate of interest would be equal to the expected difference in inflation rates. One shall use the same procedure to find the real rate of interest as were used in capital budgeting problems.

$(1 + \text{Money rate}) = (1 + \text{Real rate}) (1 + \text{inflation rate})$

FORMULAE**INTERNATIONAL FINANCIAL MANAGEMENT**

$$\text{Spread} = \frac{\text{Offer Rate} - \text{Bid Rate}}{\text{Offer Rate}}$$

$$\text{Spread in \%} = \frac{\text{Offer Rate} - \text{Bid Rate}}{\text{Offer Rate}} \times 100$$

DIRECT QUOTE

$$\text{Forward Premium/Discount} = \frac{\text{Forward Rate} - \text{Spot Rate}}{\text{Spot Rate}} \times \frac{365}{n} \times 100$$

INDIRECT QUOTE

$$\text{Forward Premium/Discount} = \frac{\text{Forward Rate} - \text{Spot Rate}}{\text{Forward rate}} \times \frac{365}{n} \times 100$$

Hedging Techniques

Hedging Technique	To Hedge Payables	To Hedge Receivables
1. Futures hedge	Purchase a currency futures contract (or contracts) representing the currency and amount related to the payables.	Sell a currency futures contract (or contracts) representing the currency and amount related to the receivables.
2. Forward hedge	Negotiate a forward contract to purchase the amount of foreign currency needed to cover the payables.	Negotiate a forward contract to sell the amount of foreign currency that will be received as a result of the receivables.
3. Money market hedge	Borrow local currency and convert to currency denominating payables. Invest these funds until they are needed to cover the payables.	Borrow the currency denominating the receivables, convert it to the local currency, convert it to the local currency, and invest it. Then pay off the loan with cash inflows from the receivables.
4. Currency option hedge	Purchase a currency call option (or options) representing the currency and amount related to the payables.	Purchase a currency put option (or options) representing the currency and amount related to the receivables.

ROBLEMS IN INTERNATIONAL FINANCE

Question No: 1 Identify quotes

Following are the quotes given by Banker at Mumbai. Identify the quote as Direct or Indirect quote. Also compute the Direct for Indirect Quote and Vice-versa.

	Quote – Direct / Indirect	Quote the Opposite Rate
1) 1\$ = Rs.48.94		
2) 1£ = Rs.71.04		
3) 1 INR = Euro 0.0225		
4) 100 Indo Rupiah = Rs.0.53		
5) 1 HK\$ = Rs.6.28		
6) 1 INR = NZ\$0.0449		
7) 1 Aus\$ = Rs.26.72		
8) 100 SKw = Rs.3.83		
9) 1 INR = C\$0.0319		

Question No: 2 Spread

From the following find out Bid – Rate and offer – Rate. Also find out the spread. Express the spread in %.

	Bid - Rate	Offer – Rate	Spread	Spread %
a) INR/\$ 48.72 – 48.94				
b) INR/Euro 44.44 – 44.67				
c) INR/100 ¥ 38.01 – 38.14				
d) INR/£ 71.00 – 71.12				
e) INR/HK\$ 6.14 – 6.32				
f) INR/sFr 4.52 – 4.78				
g) INR/Aus\$ 26.41 – 26.72				
h) INR/100 SKw = 3.71 – 3.83				
i) INR/Sing\$ 26.94 – 27.09				

Question No: 3 Expression of spread in %

Find out the indirect quote for items referred in Question: 2. Also find out the spread & Express the spread in %.

	Indirect Quote	Bid – Rate	Offer – Rate	Spread	Spread in %.
a)					
b)					

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c)					
d)					
e)					
f)					
g)					
h)					
i)					
j)					

Question No: 4 General application

In which country the following quotation is picked.

a) Euro/£	1.6011	
b) \$ / £	1.4516	
c) ¥ / \$	128.3167	
d) A\$ / Can\$	1.1733	
e) HK\$ / ¥	6.0732	
f) Thb / NZ\$	19.5165	
g) Id R / A\$	5058.6899	
h) \$ / IdR	0.0108	
i) ¥ / INR	2.6219	

Question No: 5 Cross rate quotes

Find out the cross rates from the following:

¥/\$ =	a) \$/£ = 1.5240	¥/£ = 235.20
T/£ =	b) Euro/£ = 2.5150	Euro/T = 205.80
\$/£ =	c) sFr/£ = 4.3510	\$/sFr = 0.4450
Can\$/£ =	d) \$/Euro = 0.36	Euro/Can\$ = 0.30
Euro/£ =	e) \$/£ = 1.5537 - 59	Euro/\$ = 0.1982 - 92
£/sFr =	f) \$/£ = 2.0015 - 30	\$/sFr = 0.6965 - 70
S\$/HK\$ =	g) HK\$/INR = 0.1656 - 70	INR/S\$ = 23.9000 - 30
£/S\$ =	h) INR/£ = 65.2200 - 35	INR/S\$ = 23.9000 - 30
¥/\$ =	i) \$/Euro = 0.9042 - 9066	Euro/¥ = 0.8572 - 0.8596

Question No: 6 General Application

Assuming you are the calling bank and the following rates are quoted for U.S.\$ against SFR

Day 1	1.6962/78
2	1.6990/70.5
3	1.7027/42

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- a. On which day is it cheaper to buy U.S.\$/ w.r.t. SFR
- b. How many U.S.\$ do you need to buy 1000 SFR on Day 1
- c. What is the spread on Day 2
- d. If you exchanged \$2500 for SFR 4256.75 on which day did you exchange

Question No: 7 Premium / Discount - Forwards

Find out the Forward Quotation (FQ) from the following Spot Rate and the Swap Points and indicate the Premium / Discount. Also express Premium / Discount (%).

	Spot	1 m	P/D	3 m	P/D	6 m	P/D
a) FFr / \$	5.2321/40	25/20		40/32		21/20	
b) INR / £	65.2200/35	40/30		50/35		55/42	
c) INR / S\$	23.9000/30	30/25		40/60		45/65	
d) HK\$ / INR	0.1656/70	11/14		14/19		27/20	

	1 Months		3 Months		6 Months	
	Bid	Offer	Bid	Offer	Bid	Offer
a) FFr / \$						
b) INR / £						
c) INR / S\$						
d) HK\$ / INR						

Question NO.8 Premium / Discount – Forwards – Indirect Quote

In the above problem compute the opposite quote. Also find out the forward rate and discount or premium in annualized % .

Question No: 9 Application of Interest rate parity

The following table shows interest rates for the US\$ and FFr. The spot exchange rate 7.05 FFr per dollar. Complete the missing figures:
(All the percentage rates are annualized)

	3 months	6 months	12 months
Dollar Interest rate	11.5%	12.25%	?
Franc interest rate	19.5%	?	20%
Forward Franc per dollar	?	?	7.5200
Forward Dollar Premium %	?	6.72%	?

Question: 10 Interest Rate Parity

Following is the data pertaining to Spot rate, Forward Rate and Money market rates. Compute the missing values if the covered interest parity holds good:

S.No Spot Rs./\$ 3m For Interest \$ Interest INR

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1	33.50	33.8	?	6
2	33.70	33.4	6	?
3	33.50	?	4	6
4	?	33.8	4	8

Question No: 11 PP application and Expectation

- a) Suppose over a period of 2 years, the US price index moves from 110 to 135 and the Japanese price index moves from 105 to 112. The spot exchange rate is $1\$ = 124.1545$. What would be spot rate after 2 years from now?
- b) A customer in Germany buys an item for 335 DM. He makes enquiry in France for that item by the same time. The quotation is FFr.100. What is spot rate of FFr. In Germany?

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You have the following information:

	London	New York
Spot exchange rate	\$1.6/	0.625/\$
One-year treasury bill rate	5.00%	6.00%
Expected inflation rate	2.00%	Unknown

Assuming parity conditions hold:

- a) Estimate inflation in the US next year
- b) Estimate today's one-year forward exchange rate between pounds and dollars.

Question: 13 Forward Quotes-Swap points

Today is April 19. You see the following quotes given by the banker:

INR/USD Spot: 48.8560/48.8562
 Spot-April : 200/300
 Spot-May : 500/700
 Spot-June : 1100/1500
 Spot-July : 1900/2500

Find the rate for buying USD delivery July 19.

Question No: 14 Impact of Appreciation / Depreciation

- (a) Suppose that 1 French franc could be purchased in the foreign exchange market for 20 US cents today. If the franc appreciated 10 percent tomorrow against the dollar, how many francs would a dollar buy tomorrow?
- (b) Fleur du lac, a French co., has shipped goods to an American importer under a letter of credit arrangement, which calls for payment at the end of 90 days. The invoice is for \$ 1,24,000. Presently the exchange rate is 5.70 French francs to the \$ if the French franc were to strengthen by 5% by the end of 90 days what would be the transactions gain or loss in French francs? If it were to weaken by 5% what would happen? Make calculations in francs per \$.

Question No: 15 Common currency quotations

In 2000 a Transistor cost \$22.84 in New York, S\$69 in Singapore, and 3240 rubles in Moscow.

- (i) If the law of one price held, what was the exchange rate between US dollars and Singapore dollar? Between US dollars and rubles?
- (ii) The actual exchange rates in 2000 were S\$6.13 = US\$1 and 250 rubles = US\$1. Where would you prefer to buy your Transistor?

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Question No: 16 Cost of strike

On December 27, 2002 a customer requested a bank to remit DG 2,50,000 to Holland in payment of import of diamonds under an irrevocable LC. However due to bank strikes, the bank could effect the remittance only on January 3, 2003. The market rates were as follows: (To know more about us visit KalpeshClasses.com)

	December 27	January 3
Bombay	\$ / 100 Rs.: 3.10 – 3.15	3.07 – 3.12
London	\$/Pound: 1.7250 / 60	1.7175 / 85
DG / pound	3.9575 / 90	3.9380 / 90

The bank wishes to retain an exchange margin of 0.125%. How much does the customer stand to gain or lose due to the delay?

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Question No: 17 Settlement through Forward – Exporter / Importer.

- a. An exporter had entered into a forward sale of Swiss Franc 10000 @ Rs.21.50. On the date of expiry the spot rate is Rs.20.76-20.82. State the amount to be credited to the account of the exporter.
- b. An importer had entered into forward purchase of a foreign currency 1000 for 2 months on 1st March at 34.66. On 1st May, the contract was put through on retirement of bill. The spot rate by then is 34.31-34.56. Calculate the amount to be debited in the account of the importer.

Question No: 18 Forward- Partial and Full Cover

A Thai Company is expecting to receive US\$ 5 million from its customer in the US after three months. The current spot exchange is Baht 43.75/ US \$ and 90-day forward rate is Baht 45.35/US \$. What will be the consequences if the Thai firm (a) does not cover its exposure, (b) covers 60 percent and keeps 40 percent exposure uncovered, and (c) covers 100 percent of its exposure by entering into a forward contract? Suppose the spot exchange rate at the time the Thai company receives payment is Baht 44.10/US\$. What is the cost of the forward contract (partial and full)?

Question No: 19 Forward Cover

P.T.Usha Athletic Shoe company sells to a wholesaler in Germany. The purchase price of a shipment is 50,000 deutschemarks with terms of 90 days. Upon payment, P.T.Usha will convert the Dm to dollars. The present spot rate for DM per dollar is 1.71, whereas the 90-day forward rate is 1.70.

- a) If P.T.Usha were to hedge its foreign exchange risk, what would it do? What are the transactions necessary?
- b) Is the deutschemark at a premium or at a discount?
- c) What is the implied differential in interest rates between the two countries?(Use interest-rate parity assumptions).

Question No: 20 Substitution of Different Forward Rates.

Suppose a month ago your company entered into a 3m forward contract to purchase US \$1,00,000 against Rupee at the then 3m forward rate of Rs.33. the two month forward rate is 34.50 now. The Banker wants to replace the contract rate of 33.00 by the current forward rate for the same maturity. Rupee interest rate is 18%.

- (a) Does the change in the terms of contract warrant payment by one party to another? From whom to who? How much.

Will both parties be indifferent if required payment, if any, is effected?

Question No: 21 Early Delivery- Importer

The company had agreed on 20th February that it will buy on 20th April from the banker USD 10,000 at Rs.44.57. On 20th March, the company approaches the bank to buy USD 10,000 under the forward contract earlier entered into. The rates prevailing in the market on this date are:

Spot	Rs.44.4725/4800
April	Rs.44.2550/2625

Ignoring interest and find out the amount that would be paid/received by the company on early delivery?

Question No: 22 Early Delivery-Exporter

A company entered into an agreement with its banker on 15th March, for a forward sale contract for DEM 4,000 delivery 1st July, at the rate of Rs.28.14 per Mark. On 15th April, the company requested the bank to sell the bill for DEM 4,000 under this contract. Calculate the amount payable/receivable to the company assuming the following rates on 15th April:

Spot	DEM 1 = Rs.28.1025/1075
Delivery July	28.6475/6550

Ignore interest and the penal provisions under FEDAI rules.

Question: 23 Early Early Delivery - Importer

An Indian company enters into a forward agreement with a Bank on 17th January 2002 for purchasing 1 lac US Dollars. As on that date the forex situation was as follows:

Spot INR/\$:	46.5400/5450
31 st Jan 2002:	775/825
28 th Feb 2002:	2350/2425
30 th Mar 2002:	4000/4100

On 15th February 2002, the company comes to know that it has to make early payment for his on 28th Feb 2002 and not on 30th March 2002. The current rates on 15th February 2002 transaction date are:

Spot INR/\$:	46.5025/5075
28 th Feb 2002:	650/700
30 th Mar 2002:	2225/2275
27 th Apr 2002:	3900/4000

What are the charges payable by the company?

Question: 24 Early Early Delivery - Exporter

An Indian company enters into a forward agreement with a Bank on 19th January 2002 for selling 1.75 lac US Dollars. As on that date the forex situation was as follows:

Spot INR/\$:	46.5400/5450
31 st Jan 2002:	775/825
28 th Feb 2002:	2350/2425

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30th Mar 2002: 4000/4100

On 15th February 2002, the company comes to know that it has to receive early remittance on 28th Feb 2002 and not on 30th March 2002. The current rates on 15th February 2002 transaction date are:

Spot INR/\$:	46.5025/5075
28 th Feb 2002:	650/700
30 th Mar 2002:	2225/2275
27 th Apr 2002:	3900/4000

What are the charges receivable/payable by the company?

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Question: 25 Early Extension - Importer

An Indian company enters into a forward agreement with a Bank on 17th January 2002 for purchasing 1 lac US Dollars. As on that date the forex situation was as follows:

Spot USD/INR:	46.5400/5450
31 st Jan 2002:	775/825
28 th Feb 2002:	2350/2425
30 th Mar 2002:	4000/4100

On 15th February 2002, the company comes to know that it has to settle its payable on 30th March 2001 and not on 28th February 2002. The current rates on 15th February 2001 transaction date are:

Spot INR/\$:	46.5025/5075
28 th Feb 2002:	650/700
30 th Mar 2002:	2225/2275
27 th Apr 2002:	3900/4000

What are the charges payable by the company?

Question No: 26 Early Extension - Exporter

On 15th March, K Ltd entered into a forward sale contract for US dollars 5,000 with its banker at the rate of Rs.45.05 delivery due on 15th June. On 5th May, the company

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requests the bank to postpone the date to 15th July. Calculate the extension charges payable to the banker assuming the following rates in the market on 5th May.

Spot	USD 1 = Rs.45.00/02
Spot/June mid	45.04/06
Spot/July mid	45.04/10
Spot/Aug mid	45.1/14

Question No: 27 Due date extension - Importer

An importer bought USD 1,00,000 3 months forward on December 29 at a contract rate of Rs.44.50, delivery March 31. On March 29, the importer requests the bank to extend the contract to April 29. (For any inquiry or admission to kalpesh classes dial 2382 0676)

On March 29 the market rates are:

INR/USD Spot: 44.80/45.05 1-month swap: 10/12.

Calculate the charges payable / receivable to the banker.

Question No: 28 Due date extension - Exporter

Gayle Company Ltd had booked a forward sale contract for USD 2,00,000 at Rs.45.22 a bill for collection. However, on the maturity date the company requested to extend contract by one month:

Assuming the on-going market rates for US dollars are as under:

Spot	USD 1 = Rs.45.1925/2575
One month forward	600/700
Two months forward	900/1,000
Three months forward	1,200/1,300

What will be the extension charges payable/receivable by the company

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Question: 29 Early cancellation - Importer

On September 15 the Rs./\$ rates were 41.15/41.40 spot and 82/95 3 month swap points. A firm booked a 3 month forward purchase contract for \$1,50,000. on November 15 it wished to cancel the contract. At that time, the spot rate was 41.90/42.10 and one month swap rate was 20/30. How much is collectable / payable by customer.

Question No:30 Early Cancellation - Exporter

A customer with whom the bank had entered into a 3 months' forward purchase contract for Sw.Fcs. 10,000 at the rate of Rs.27.25 comes to the bank after two months and requests cancellation of the contract. On this date, the rates and prevailing are:

Spot	Sw.Fcs 1 = Rs.27.30 – 27.35
1 month forward	27.45 – 27.52

What is the loss/gain to the customer on cancellation?

**BRIEF TIME TABLE FOR NOVEMBER 2005 C.A. FINAL EXAMINATION.
SUBJECT : DIRECT TAX**

EXAMINATION	BRANCH	COMMENCING	ADMISSION STATUS
NOV 2005 (A.Y. 2005-2006)	ANDHERI	19-07-2005	In Progress
NOV 2005 (A.Y. 2005-2006)	CHARNI ROAD	24-05-2005	In Progress
NOV 2005 (A.Y. 2005-2006)	GHATKOPAR	17-07-2005	In Progress

Course Coverage for all the branches is the same.

All lectures are conducted by Professor Mr.Kalpesh Sanghavi Only.

Question No: 31 Due date Cancellation - Importer

On 15th January a company booked a forward purchase contract for French Francs 250000 from a banker, delivery 15th February at Rs.6.95. On the due date the customer requests cancellation of the contract.

Assuming French Francs were quoted in the London foreign exchange market as under:

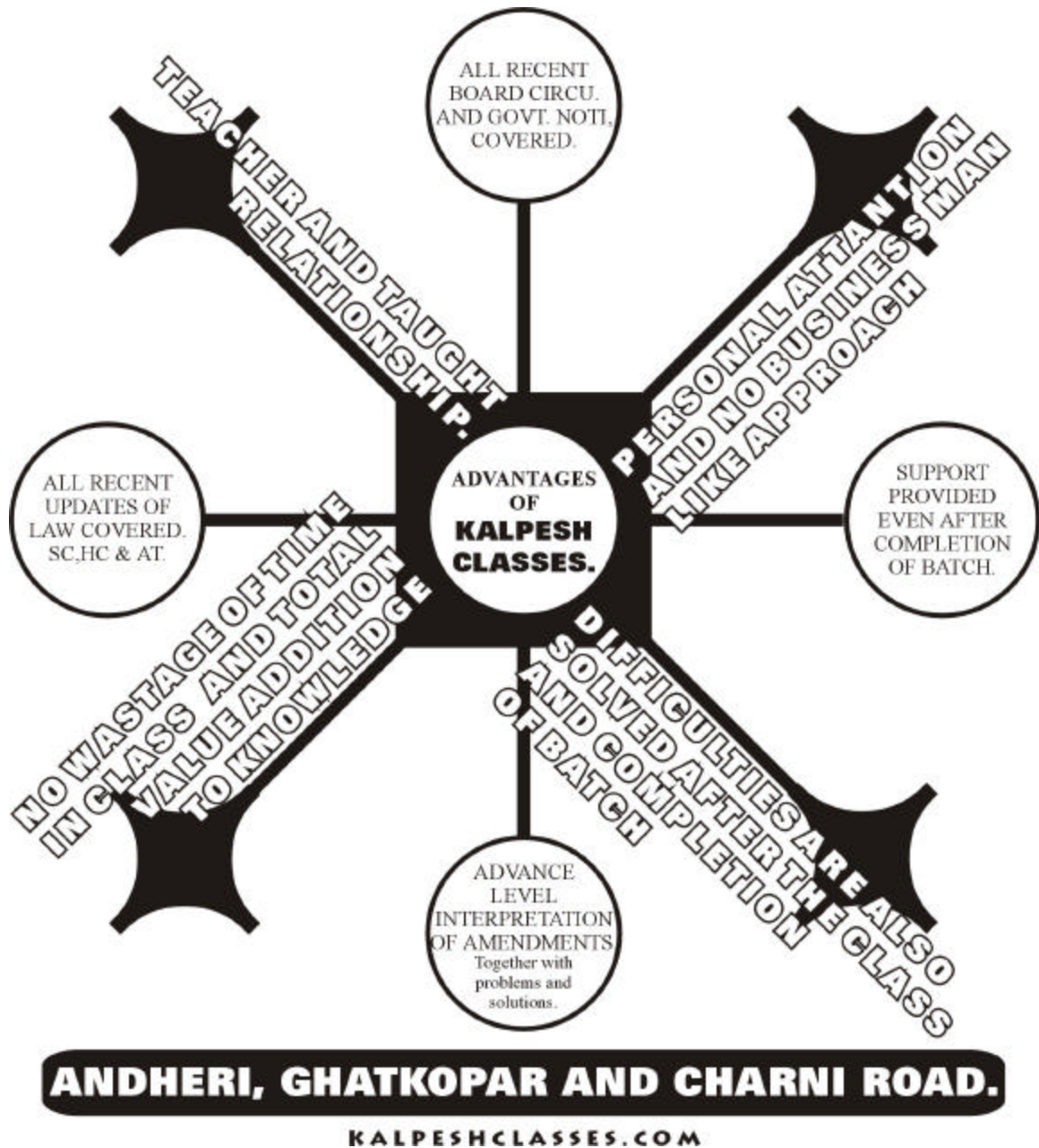
Spot	USD 1 = FFR 5.0200/0300
One month	305/325
Two month	710/760

And the US dollars were quoted in the local exchange market as under on the date of cancellation:

Spot	USD 1 = Rs.44.7900/7975
Spot/March	30/35
Spot/April	60/65

What will be the charges payable by the company, if any or otherwise?

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Question No: 32 Due date Cancellation - Exporter

FX Ltd had booked a forward sale contract for Deutsche Mark 50,000 delivery 20th November at Rs.23.05. The company on the due date requested cancellation of forward exchange contract.

Assuming Deutsche Marks were quoted in the Frankfurt market as under:

Spot	USD 1 = DEM 1.5150/5170
One month forward	125/115
Two month forward	280/270

And the US dollars were quoted in the local market as under:

Spot	USD 1 = Rs.44.6125/6200
Spot / December	34/36

What will be the cancellation charges, if any, payable or receivable by FX Ltd?

Question No: 33 Capital Budgeting – Overseas.

A Ltd., and India based MNC is evaluating an overseas investment proposal. It is considering a project building a plant in United Kingdom. The proposal would initially cost 50 million pounds and is expected to generate the following cash flows, over its 4 years life.

Years	1	2	3	4
Cash flow in million (£)	20	30	20	10

The current spot rate => 1£ = Rs.70, Risk free rate in India is 10%, in United Kingdom is 6%.(We have teacher and taught relation ship and no business man like approach.)

The companies cost of capital is 20%. Will the project be undertaken?

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PROF. JAISON (C.A.)

NOW LIVING ~~WORKING~~ TOGETHER.**Question No: 34 Capital Budgeting – Overseas.**

B Ltd. has a project requiring an outlay of \$200 million. Following are the cash flows over its 5years life.

Years	1	2	3	4	5
Cash flows in million(\$)	50	70	90	105	80

Spot rate 1\$ = Rs.46. Interest rate in India = 11%., in the risk free rate in US = 6%. The companies cost of capital = 18%. Should the project be accepted?

Question No: 35 Capital Budgeting – Overseas – Two Way Approach

An American firm is evaluating an investment proposal in Holland. The project cost is 1.5 million NLG (Netherlands guiders). The interest rate in Holland and USA are respectively 6% and 5%. The spot rate in NLG = 0.5\$. Cost of capital in USA = 16% and the NLG discount rate is 17.1%. The Cash flows for the 5years project are as follows.

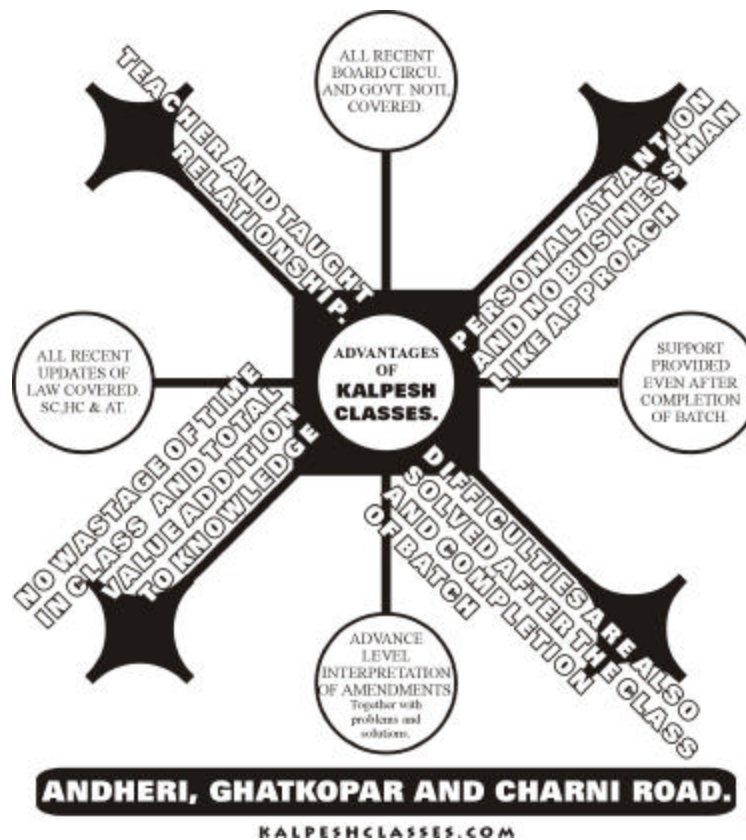
Years	1	2	3	4	5
Cash flow (in '000)	400	450	510	575	650

Evaluate under both approaches and advise whether the project should be taken up.

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Question No: 36 Capital Budgeting – Overseas – Two Way Approach

An Indian firm is considering the possibility of building a plant to manufacture an industrial chemical in Thailand. The cost of investment is estimated to be Baht 25million. The life of the investment is expected to be 12 years. It is expected the annual net cash flow in real terms will be Baht 4million. The current spot exchange rate is Baht1.105/INR. The risk-free interest rate in Thailand and India is 12 percent and 10 percent, respectively. The expected inflation rate in Thailand is 8 percent. The Indian firm considers the opportunity cost of capital to be 7.25 percent above the risk-free rate. Should the Indian firm make investment in Thailand? Show NPV calculations in Indian rupees using cash flows in (a) baht and (b) rupees.

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IN ASSOCIATION WITH KALPESH CLASSES**Question No: 37 Capital Budgeting**

You have been engaged to evaluate an investment project overseas in a country called East Africa, which is a politically stable country. The project involves a initial cost of East African dollar 2.5 crores (EA \$) and it is expected to earn post tax cash flows as follows:

Year	1	2	3	4
Cash Flow in (EA \$ lacs)	75	95	125	135

Further, the following information is available.

- (a) The expected inflation rate is East Africa in 3% per year.
- (b) Real interest rate of India as well East Africa is same and are expected to remain same during the currency of project.
- (c) Current spot rate is EA \$ 2 per Re.1.
- (d) Risk free rate of interest in East Africa is 7% and in India 9%.
- (e) Required return from the project is 16%.

You may make suitable (generally acceptance) assumptions in order to evaluate the project.

Question No: 38 Arbitrage

Find out Arbitrage Possibilities from the following. If so from where investment should start. Assume there are no transaction cost.

Rs.55.5000 = £1 in London.

Rs.35.625 = \$1 in Delhi.

\$1.5820 = £1 in New York.

Question No: 39 Forward – Interest rate parity

Singapore dollar (SG \$) and Indian Rupee rates are available to you as under

SPOT rates :	20.725	Rs./SG \$
	0.04825	SG \$/Re.
90 day rates	20.687	Rs./SG \$
	0.04834	SG \$/Re.

Singapore prime interest rate as on date is 9.5%.

Note: Use 365 day's a year.

Required:

- (i) Explain what is implied about the Indian interest rate.

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- (ii) Calculate and comment on Indian interest rate if the forward exchange rate was 0.04795 SG \$/Rs.
- (iii) Calculate and comment on the 90 days forward rate on Rs. SG \$ if Indian interest rate was 8%.

Question No: 40 Covered Interest Arbitrage-Single quote

Is covered interest arbitrage possible in the following situation? If so where to invest? How much shall be the gain? (For any inquiry or admission to kalpesh classes dial 2382 0676)

- a) Spot Can\$ 1.317/\$. Forward 6 Months 1.2950 Can \$/\$: US\$ - 10%: Can \$ - 6%.
- b) Spot 100 ¥ = Rs.35.002 Forward 6 Months Rs.35.9010: INR – 12%: ¥ - 7%.
- c) Spot 1\$ = 5.9000 FFr Forward 6 Months FFr 6.0012: US\$ - 3%: FFr – 6%
- d) Spot Can \$ 1.5140 /\$. Forward 6 Months Can \$1.5552 / \$ Can 10% US 6%.

Question: 41 Covered Interest Arbitrage-Single Quote

Consider the following data:

	Exchange rate	\$ Interest rate	Interest rate
Spot	\$ 1.5753/	-	-
1 m	\$ 1.5623/	3	8.5
3 m	\$ 1.5577/	3.5	7.5
6 m	\$ 1.5536/	3.5	7

Find out the arbitrage possibilities for the various periods?

Question No: 42 Covered Interest arbitrage-Two way quote

Following are the rates quoted at Bombay for British pound:

BP/Rs.	52.60/70	Interest Rates	India	London
3 m Forward	20/70	3 months	8%	5%
6 m Forward	50/75	6 months	10%	8%

Verify whether there is any scope for covered interest arbitrage if you borrow rupees.

Question No: 43 Forward vs Money market hedge - Importer

The finance director of P Ltd., has been studying exchange rates and interest rates relevant to India and USA. P Ltd. has purchased goods from the US Co. at a cost of \$ 51 Lakhs payable in dollars in three months time. In order to maintain profit margins the finance director wishes to adopt, if possible, a risk-free strategy that will ensure that the cost of the goods to P Ltd. is no more than Rs.22 crores.

Exchange rates	Rs / Dollar	
Spot 40 – 42;	1 month forward 41–43,	3 months forward 42 – 45

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Interest rates (available to P Ltd.)

	India		USA	
	Deposit rate (%)	Borrowing rate (%)	Deposit rate (%)	Borrowing rate (%)
1 Month	13.00	15.00	7.00	10.00
3 Month	13.00	16.00	8.00	11.00

Calculate whether it is possible for P Ltd. to achieve a cost directly associated with transaction of no more than Rs.22 crores by means of a forward market hedge, or money market hedge. Transactions costs may be ignored.

Question No: 44 Forward vs Money Market hedge with taxation

On March 1, 2003, the B Ltd. bought from a foreign firm electronic equipment that will require the payment of LC 9,00,000 on May 31, 2003. The spot rate on March 1, 2003, is LC 10 per dollar; the expected future spot rate is LC 8 per dollar; and the ninety-days forward rate is LC 9 per dollar. The US interest rate is 12 percent, and the foreign interest rate is 8 percent. The tax rate for both countries is 40 percent. The B Ltd. is considering three alternatives to deal with the risk of exchange rate fluctuations.

- To enter the forward market to buy LC 9,00,000 at the ninety – days forward rate in effect on May 31, 2003.
- To borrow an amount in dollars to buy the LC at the current spot rate. This money is to be invested in government securities of the foreign country; with the interest income, it will equal LC 9,00,000 on May 31, 2003.
- To wait until May 31, 1999, and buy LCs at whatever spot rate prevails at that time.

Which alternative should the B Ltd. follow in order to minimize its cost of meeting the future payment in LCs? Explain.

Question No: 45 Foreign Currency – Underlying – Options

A German firm buys a call on \$10,00,000 with a strike of DM1.60/\$ and a premium of DM 0.03/\$. The interest opportunity cost is 6% p.a. and the maturity is 180 days.

- What is the break even maturity spot rate beyond which the firm makes a net gain?
- Suppose the six month forward rate at the time the option was bought was DM1.62/\$. What is the range of maturity spot rate for which the option would prove to be better than the forward cover? For what range of values would the forward cover be better?

Question No: 46 IFM and Options

A French exporter to UK has 90 day sterling receivable. He purchases a put option of 2,50,000 at a strike of FFr8.0550/ at a premium of FFr0.20 per pound. The current spot rate is FFr8.1000/ and the 90-day forward is 8.0750. The interest opportunity cost for the firm is 9% p.a.

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- (a) Calculate the maximum FFr/ rate at the end of 90 days below which the firm will make a net gain from the put.
- (b) Calculate the range of maturity spot over which the option would be better than the forward and vice-versa.

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Question No: 47 Forward, Money Market & Currency Options.

Cutting Edge Ltd, London will have to make a payment of \$3,64,897 in six month's time. It is currently 1 st October. The company is considering the various choices it has in order to hedge its transaction exposure.

Exchange rates:	
\$ spot rate	1.5617 – 1.5773
Six- month \$ forward rate	1.5455 – 1.5609

Money market rates:		
	Borrow(%)	Deposit(%)
US	6	4.5
UK	7	5.5

Foreign currency option prices (1 unit is £12,500):

Exercise price	Call option (March)	Put option (March)
\$1.70	\$0.037	\$0.096

By making the appropriate calculations decide which of the following hedging alternatives is the most attractive to Cutting Edge Ltd:

- (a) Forward market
- (b) Cash (Money) market;
- (c) Currency options.

Question No: 48 Forward, Money Market & Currency Options.

LM Ltd. will need Great Britain Pound 2 lacs in 6 months. The spot rate of a pound is US is \$1.50. Six months forward rate is \$1.47. Interest rates are as follows:

	U.K in %	US in %	
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6 months deposit rate	4.5	4.5
6 months borrowing rate	5	5

A call option on pound 6 months term at exercise price of \$1.48 for a premium of \$0.03.
Similarly Put option for the same term of \$1.49 at a premium of \$0.02

LM Ltd. Forecasts the future spot rate at 6 months as follows:

Possible Outcome	Probability
\$1.43	20 %
\$1.46	70 %
\$1.52	10 %

A) Find out the best hedging alternative from the following:

- a) Forward
- b) Money Market
- c) Option

B) Also check up the outflow when there is no hedge.

Supposing based on the above information, the company needs to collect 3 lacs pounds in 6 months time, find out the best alternative.

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Question No: 49 Usage of Options in IFM

An American importer has a payable in Yen in six months time the market prices are as follows:

US\$/¥ Spot : 125.00

US\$/¥ 6- months Forward : 122.30

6 month Yen call option, strike 122.30 : Premium 3.25%

6 month Yen call option, strike 120.00 : Premium 2.15%

6 month Yen put option, strike 126.00 : Premium 2.15%

6 month Yen put option, strike 127.50 : Premium 1.75%

The firm is evaluating the following hedging strategies:

- (a) Forward purchase of yen

- (b) Buy a 6-month call, strike 122.30
- (c) Buy a 6-month call, strike 122.30 and simultaneously write a 6-month put, strike 127.50.
- (d) Buy a 6-month call, strike 120.00, write a 6-month put, strike 126.00.
- (e) Do not hedge.

Compare these alternatives, with the forward contract as the standard of comparison. The option premia are in terms of % of the principal amount to be hedged.

Question No: 50 Usage of Options as a measure of hedging

Your Company has a 12 month payable of DM 1,00,000. the current Rs./DM spot rate is Rs.20, rupee interest rate is 21% p.a. and DM interest rate is 10% p.a. you are considering a forward hedge at the current forward rate of Rs.22. An Executive of another company tells you that he recently bought a call on DM 1,00,000 at a strike price of Rs.20 and is willing to sell it to you at the historic premium of Rs.1 per DM or Rs.1,00,000 for the entire contract. The call matures at the same time as your payable and is a European call. What should you do?

Question : 51 Hedging by Options

You are the financial controller of IBM Inc, New York. You plan to visit Geneva, Switzerland, in three months to attend an international business conference. You expect to incur a total cost of SFr 5,000 for lodging, meals, and transportation during your stay. As of today, the spot exchange rate is \$0.60/SF and the three-month forward rate is \$0.63/SF. You can buy the three month call option on SF with an exercise price of \$0.64/SF for the premium of \$0.05 per SF. The three-month interest rate is 6 percent per annum in the United States and 4 percent per annum in Switzerland.

- (a) Calculate your expected dollar cost of buying SF5,000 if you choose to hedge by a call option on SF.
- (b) Calculate the future dollar cost of meeting this SF obligation if you decide to hedge using a forward contract.

At what future spot exchange rate will you be indifferent between the forward and option market hedges? (To know more about us visit KalpeshClasses.com)

Question: 52 Currency Options

A firm had participated in a bid on a foreign contract, involving supply of agri-products worth Can \$ 100 million receivable. The outcome of the bid is uncertain but CFO had bought put option expiring 6 months coinciding with proceeds on the contract for Can \$ 1 million.

Strike price Rs.30.75 per Can\$

Situation	Bid	Maturity Rate	Whether option will be exercised?
1	Successful	> Exercise price	
2	Successful	< Exercise price	
3	Failure	> Exercise price	
4	Failure	< Exercise price	

Assume Maturity Prices at Rs.30.10, Rs.31.40 and Rs.30.75.

- (a) Explain the position of the company against 3 maturity spot prices in the event of successful and unsuccessful bid. Ignore Premia.
- (b) When Call option would be bought such as exporting/importing?
- (c) Will that hold good for UK based company? Thoroughly discuss.

Question: 53 Currency futures

Today is March 24. Dow Chemical has shipped chemicals worth SFr 25 million to Ciba-Geigy. Ciba will pay in 180 days on September 26. The market rates are:

S Fr/\$ spot: 1.2564/72 180 day swap: 217/213

USD interest rate:

5.20/5.30 S Fr interest rate: 1.85/1.95

180-day call on SFr strike USD 0.80 per SFr: 2% premium

180-day call on SFr strike USD 0.80 per SFr:
1% premium.

September futures on SF are trading at USD 0.8093. Each futures contract is for SF 1,25,000 and the round-trip brokerage fee is USD 50 per contract.

Evaluate the various hedging alternatives available to Dow.

Question: 54 Leading and Lagging

An American firm has a 180-day payable of Aus\$ 10,00,000 to an Australian supplier. The market rates are:

Aus \$ / \$ spot: 1.3475 180 day forward 1.3347

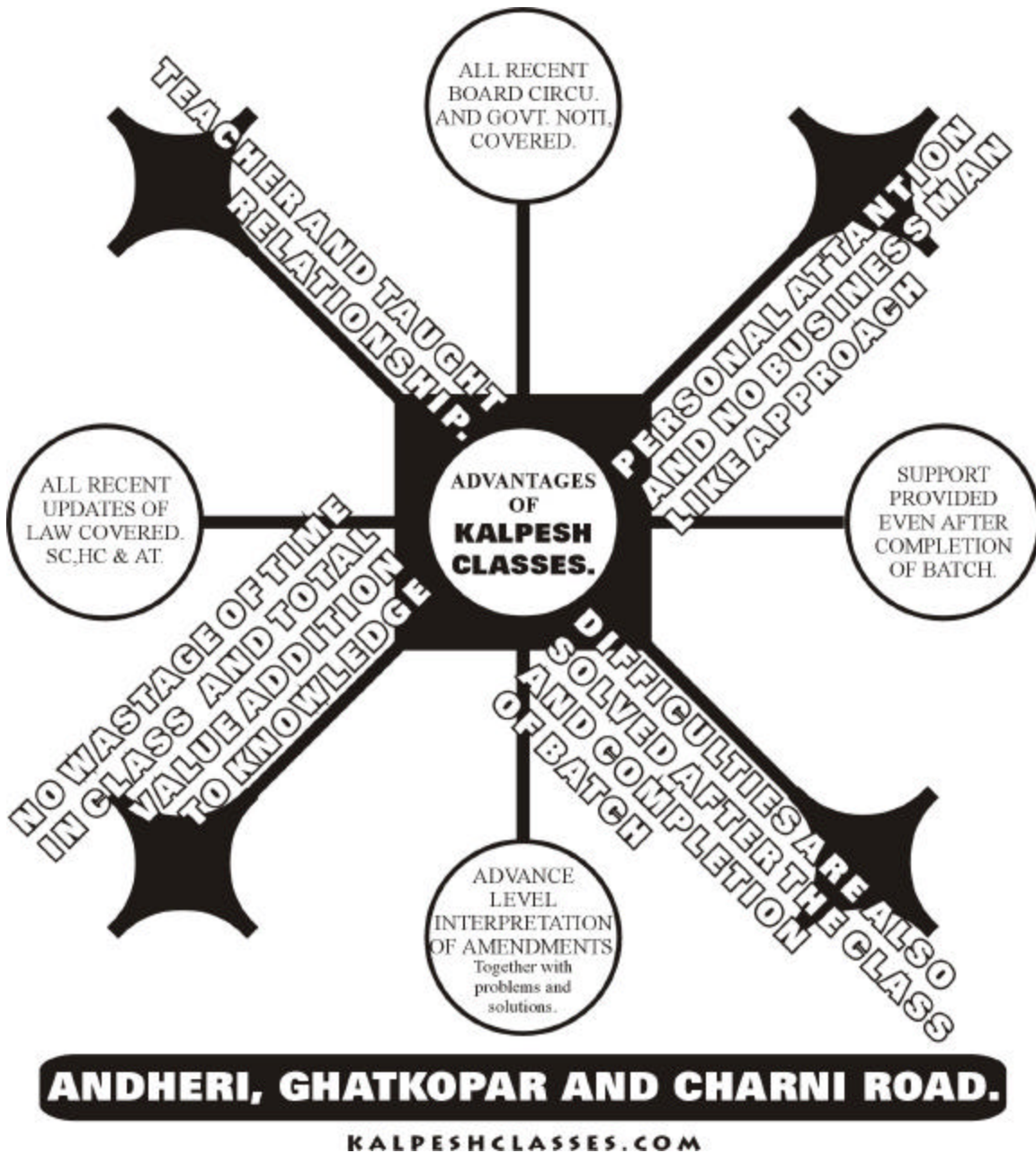
US\$ 180-day interest rate : 10% p.a

Aus \$ 180-day interest rate : 8% p.a

The Australian authorities have imposed a restriction on Australian firms which prevents them from borrowing in the Aus\$ market. Similarly, non-residents cannot make money-market investment in Australia. As a consequence, the domestic 180-day interest rate in Australia is

9.5% p.a. The American firm wants to evaluate the following four alternative hedging strategies:

- a. By Forward.
- b. By Money market hedging.
- c. By Leading.
- d. By Leading with a forward.



Question No: 55

Interest Rate Swap

Two companies, A and B are considering entering to a swap agreement with each other. Their corresponding borrowings rates are as follows:

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Company	Floating Rate	Fixed Rate
A	Libor	12 %
B	Libor + 0.3%	13.5 %

Company A requires a floating rate loan of Rs.50 Lacs while Company B requires a fixed rate loan for the same amount.

- a) Which company has a comparative advantage in floating rate loans and which company has a comparative advantage in fixed rate loans?
- b) At what rate will Company A be able to obtain floating rate finance and Company B be able to obtain fixed rate finance, if the two companies engage in a swap agreement and the benefits of the swap are split equally between the two parties? Ignore any bank charges.

Question No: 56 Interest Rate Swap

Company ABC and XYZ have been offered the following rates per annum on a Rs. 200 Lacs five-year loan:

	Fixed Rate	Floating Rate
Company ABC	12.0	Libor + 0.1%
Company XYZ	13.4	Libor + 0.6%

Company ABC requires a floating-rate loan; company XYZ requires a fixed-rate loan. Design a swap that will net a bank acting as intermediately 0.1 percent per annum and be equally attractive the both companies.

Find out the advantageous interest rate for the two companies.

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Question No: 57 Interest Rate Swap

ABC Ltd. is a financial institution which enjoys very good credit rating. It lends at floating rates and borrows at fixed rate and it has risk of floating rates fall.

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XYZ Ltd. is a manufacturing company enters into a fixed price contract to purchase Machinery. It has higher funding costs, whether fixed or floating. It has risk of losses if funded on a floating rate basis.

The relative borrowing costs of ABC Ltd. as XYZ Ltd. are as follows:

Name of the Company	Fixed rate %	Floating Rate %
BC Ltd. (Financial Institution)	8	LIBOR
XYZ Ltd. (Manufacturing Company)	10	LIBOR + 1
Differential borrowing cost	2	1

What is the savings for both the companies?

Question: 58 Hedging

BPCL requiring US\$20,00,000 to settle by 90 days for the crude oil commitments. the following rates are available.

Spot

INR / \$	48.95 – 49.00
90 days swap	15 – 20
US Interest rate %	5.00 – 5.25

Bank of Baroda, the chief banker for BPCL advise Yen Loan for settlement. Yen Loan is available at 2.5% p.a. BPCL finds the exchange rate as follows:

Spot

¥/\$	123.50 – 124
90 days Swap	20 – 10

What is the borrowing currency for BPCL Ltd. BOD of BPCL expresses that the bottom line would be affected very much on assuming any fluctuation risk what so ever.

CAPITAL BUDGETING

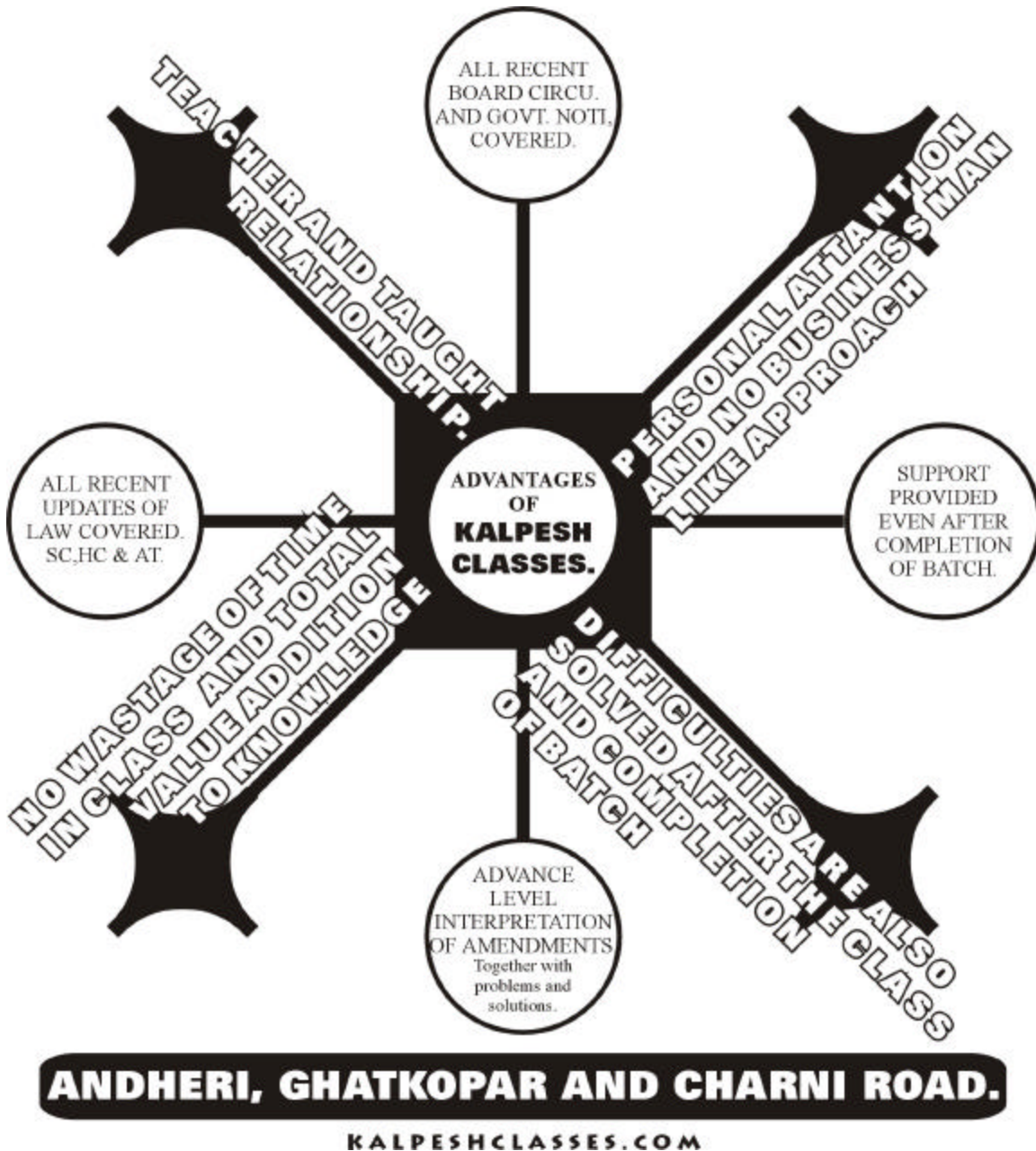
SALIENT FEATURES:

- Involves Huge Cash Outlays.
- Irreversible Decisions.
- Wrong Decisions leads to Liquidation.
- Matching of Cash Flows would be involved.

MAXIMS:

1. Consider only Cash Flows; Ignore Accounting Profits.
2. Consider only on Incremental basis; Ignore Average Calculation.
3. Consider all Incidental effect; Include Opportunity cost.
4. Beware of Allocated cost; Ignore Sunk Cost.
5. Separate Investing Decision and Financing Decisions.
6. No Taxation – No Depreciation.
7. Consider Working Capital Requirements.
8. Be consistent with Inflation.
9. All Cash flows are assumed to accrue at the end of the year.

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TOOLS OF CAPITAL BUDGETING

	NON-DISCOUNTED CASH FLOW		DISCOUNTED CASH FLOW				
	Pay Back	ARR	NPV	IRR	PI	EAC or EAB	DISC PB
Expression	Years	%	Rs.	%	Points	Rs.	Years
Formula	Recovery Time of Investment	$\frac{\text{Avg. Return}}{\text{Avg. Investment}} \times 100$ (or) $\frac{\text{Annual Return}}{\text{Initial Investment}} \times 100$	DISCCI - DISCCO	Interpolation	$\frac{\text{DISCCI}}{\text{DISCCO}}$	$\text{EAC} = \frac{\text{DISCCO}}{\text{AF}}$ $\text{EAB} = \frac{\text{DISCCI}}{\text{AF}}$ (or) $\frac{\text{NPV}}{\text{AF}}$	DISPB = Recovery time based on DISCC
Acceptance Criteria	Shortest	Highest	Highest (+ve)	Highest	Highest	EAC - Lowest EAB - Highest	Shortest
Applicability	Cost of capital is not given	Cost of capital is not given	No disparity	---	Capital rationing i.e. Non-mutually exclusive project with disparity Ignore life disparity and consider size disparity	Mutually exclusive project with disparity ignore size disparity and consider life disparity	Cost of capital given and ask for time BE

AF: Annuity Factor

DISCCI: Discounted Cash Inflow

DISCCO: Discounted Cash Outflow

EAC: Equated

Annual Cost

PI: Profitability Index

EAB: Equated Annual Benefits Return

NPV: Net Present Value
PB: Pay Back

ARR: Annual Rate of Return

IRR: Internal Rate of

Accounting Rate of Return
Average Rate of Return

Question No: 1 Basics on Capital Budgeting

(a) Find out future value of cash flows. Assume interest cost @10% for the following

Amount	No. of years	Compounding factor	Future value of cash flows
1000	7		
2500	4		
3250	6		
4800	5		
5600	8		

(b) Find out the Present value of future cash flows. Assume 10% discount rate.

Amount	No. of years	Annuity factor	Present value of cash flows
1000	7		
2500	4		
3250	6		
4800	5		
5600	8		

(b) Find out the Present value of future cash flows. Assume 10% discount rate.

Year end	CF (Rs)	PVF	PV of CF	PVF @12%	PV of CF
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
Total					

(c) Find out the future cash flows if Cost of capital and inflation rate are respectively 10% and 12% for Rs.1000 for a term of 5 years.

(f) Find out the missing figures from the following

Situation	Real cost	Inflation rate	Money rate
1	10	5	?
2	8	?	17.72
3	?	5	12.35

Question No: 2 Ascertainment of Cash flow

(a) Find out the cash flow for investing decision.

Sales	400	5000	2250
Cost	(270)	2750	1000
PBIT	130	2250	1250
I	30	675	250
PBT	100	1575	1000
Tax	40	575	300
PAT	60	1000	700
Cash flow			

(b) Find out the cash flow for investing decision.

Profit before depreciation	400	160	90
Depreciation	(100)	60	15
PBT	300	100	75
Tax	(120)	30	25
PAT	180	70	50
Cash flow			

Question No:3

Situation	Mutually exclusive	Life	Size	Tool to be selected
1	Yes	Yes	Yes	
2	Yes	Yes	No	
3	Yes	No	Yes	
4	No	Yes	Yes	
5	No	No	Yes	
6	Yes	No	No	
7	No	Yes	No	
8	No	No	No	

Question No: 4 Basics on Capital Budgeting

One project of a company is doing poorly and is being considered for replacement. Three mutually exclusive projects A,B & C have been proposed. The projects are proposed to require Rs.200000 each and have an estimated life of 5,4,3 years respectively and have no salvage value. The company's required rate of return is 10%. The anticipated cash inflows after taxes for the three projects are as follows:

Year	A	B	C
1	50000	80000	100000
2	50000	80000	100000
3	50000	80000	10000
4	50000	30000	--
5	190000	--	--

- Rank each project applying the methods of Pay-back, average rate of return, net present value, internal rate of return and profitability index.
- What would be the profitability index if the IRR equaled the required rate of investment? What is the significance of a profitability index less than one?
- Recommend the project to be adopted and give reasons.

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Question No: 5 Capital Rationing

A company with a 12% cost of funds and limited investment funds of Rs.4 Lacs is evaluating the desirability of several investment proposals

Project	Initial Investment (Rs. In Lacs)	Life . in years	Year end cash flows (Rs.in 000s)
A	3	2	187.6
B	2	5	66.0
C	2	3	100.0
D	1	9	20.0
E	3	10	66.0

- Rank the projects according to the profitability index and NPV methods
- Determine the optimal investment package
- What projects should be selected, if the company has Rs.5 Lacs as the size of its capital budget.
- Determine the investment package in the above situations, assuming that the projects are divisible.

Question No: 6 Cashflow Analysis

Following cash flow details are available for project A and B. Having an initial outlay of Rs.5.4crs. and 4.7crores respectively.

Years	Project A			Project B		
	PAT	Depn	Interest	PAT	Depn.	Interest
0	(540)	-	-	(470)	-	-
1	185	50	60	100	45	50
2	110	50	50	105	45	40
3	195	50	40	135	45	30
4	225	50	30	125	45	20
5	175	50	20	175	45	10

Tax rate = 30% cost of capital = 20% only one of the two project can be chosen. Identify which is to be chosen based on (a) NPV, (b) IRR, (c) PI / (benefit cost ratio).

Question No: 7 Permutation of projects

The Anson Company is evaluating three investment situations:

(1) produce a new line of aluminum skillets, (2) expand its existing cooker line to include several new sizes, and (3) develop a new higher-quality line of cookers. If only the project in question is undertaken, the expected present values and the amounts of investment

Project	Investment Required	Present value of Future cash flows
1	Rs.200,000	Rs.290,000
2	115,000	185,000
3	270,000	400,000

If projects 1 and 2 are jointly undertaken, there will be no economies; the investments required and present values will simply be the sum of the parts. With projects 1 and 3, economies are possible in investment because one of the machines acquired can be used in both production processes. The total investment required for projects 1 and 3 combined is Rs.440,000. If projects 2 and 3 are undertaken, there are economies to be achieved in marketing and producing the projects but not in investment. The expected present value of future cash flows for projects 2 and 3 is Rs.620,000. If all three projects are undertaken simultaneously, the economies noted will still hold. However, a Rs.125,000 extension on the plant will be necessary, as space is not available for all three projects. Which project or projects should be chosen?

Question No: 8 Capital rationing

Venture Ltd. has Rs.30 Lacs available for investment in capital projects. It has the option of making investment in projects 1,2,3 and 4. Each project are entirely independent and have an equal life of 5 years. the expected present value of cash flow from the projects are as follows:

Projects	Initial Outlay (Rs.)	Present value of Cash Flow
1	8,00,000	10,00,000
2	15,00,000	19,00,000
3	7,00,000	11,40,000
4	13,00,000	20,00,000

Which of the above investment should be undertaken. Assume that the cost of capital is 12% and risk free interest rate is 10% per annum.

Given compounded sum of Re.1 at 10% in 5 years is Rs.1.611 and discount factor of Re.1 at 12% rate for 5 years is 0.567.

Question No: 9 Rudimentary on Capital Budgeting

a. Following are the data on a capital project being evaluated by the management of X Ltd.

	Project M
Annual cost saving	Rs.40,000
Useful life	4 years
IRR	15%
Profitability Index	1.064
NPV	?
Cost of Capital	?
Cost of Project	?
Payback	?

Salvage value

0

Find the missing values considering the following table of discount factor only:

Discount Factor	15%	14%	13%	12%
1 Year	0.869	0.877	0.885	0.893
2 Years	0.756	0.769	0.783	0.797
3 Years	0.658	0.675	0.693	0.712
4 Years	0.572	0.592	0.613	0.636
	2.855	2.913	2.974	3.038

b. S Ltd. has Rs.10,00,000 allocated for capital budgeting purposes. The following proposals and associated profitability indexes have been determined:

Project	Amount (Rs.)	Profitability Index
1	3,00,000	1.22
2	1,50,000	0.95
3	3,50,000	1.20
4	4,50,000	1.18
5	2,00,000	1.20
6	4,00,000	1.05

Which of the above investments should be undertaken? Assume that projects are indivisible and there is no alternative use of the money allocated for capital budgeting.

Question No: 10 Life disparity

Pioneer Chemicals is evaluating two alternative systems for waste disposal, System A and Systems B which have lives of 6 years and 4 years respectively. The initial outlay and operating costs for the two systems are expected to be as follows:

	System A	System B
Initial outlay	Rs 4 million	Rs 3 million
Annual operating costs	Rs 1.2 million	Rs 1 million

If the discount rate is 13 %, which system should Pioneer choose? Ignore the salvage value.

Question No: 11 Life Disparity

A new polishing machine is required. The polishing machine forms a part of the production process and most products manufactured required polishing at various stages in their production. A polishing facility is expected to be required for as long as the factory remains in operation and no closure can be anticipated.

Details of the two machines under consideration are:

Machine	A	B
Initial Cost	Rs.50,000	Rs.90,000
Life-Years	4	7
Salvage value at end of		
4 years	Rs.5000	-
7 years	-	Rs.7000
Annual running costs	Rs.10000	Rs.8000

Both machines fulfil the same function and have equal capacities. The appropriate discount rate is 10%. Taxation may be ignored.

Required: Determine which machine should be purchased. Specify any assumptions made. To what amount would the initial cost of Machine A be required to alter in order that the two machines were then of equal financial attractiveness?

Question No: 12 Disparity in Life

Your advise is sought for choice between two options under consideration

- (a) Purchase of a petrol truck
- (b) Purchase of a battery truck

The comparative purchase and operating cost data are given below:

Year	0	1	2	3	4	5
Petrol Truck (Rs.000s)	150	24	34	29	31	-
Battery Truck (Rs.000s)	250	12	12	12	12	12

Assume an investment incentive of 100% initial depreciation, and a 50% incidence of corporate tax. No depreciation is allowed in the subsequent years. Taxes are paid promptly. A return of 10% after tax is required. Would it be advisable to buy petrol or battery powered truck.

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Question No: 13 Replacement cycle

Photolysis Ltd uses a 10% discount rate for project appraisal. It is considering purchasing a machine which, when it comes to the end of its economic life, is expected to be replaced by an identical machine and so on, continuously. The machine has a maximum life of three years but, as its productivity declines with age, it could be replaced after either just one of two years. the financial details are as follows (all figures in Rs.'000).

Years	0	1	2	3
Outlay	-1000			
Revenues		+900	+800	+700
Costs		-400	-350	-350
Scrap value		+650	+400	+150

What is the appropriate replacement cycle?

Question No: 14 Repair or Replace

S Engineering Company is considering replacing or repairing a particular machine, which has just broken down. Last year this machine costed Rs.20,000 to run and maintain. These costs have been increasing in real terms in recent years with the age of the machine. A

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further useful life of 5 years is expected, if immediate repair of Rs.19,000 are carried out. If the machine is not repaired it can be sold immediately to realize about Rs.5,000 (Ignore loss/gain on such disposal).

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Alternatively, the company can buy a new machine for Rs.49,000 with an expected life of 10 years with no salvage value after providing depreciation on straight line basis. In this case, running and maintenance costs will reduce to Rs.14,000 each year and are not expected to increase much in real terms for a few years at least. S Engineering Company regard a normal return of 10% p.a. after tax as a minimum requirement on any new investment. Considering capital budgeting techniques, which alternatively will you choose? Take corporate tax rate of 50% and assume that depreciation on straight line basis will be accepted for tax purposes also.

Given: Cumulative present value of Re.1 p.a. at 10% for 5 years Rs.3.791, 10 years Rs.6.145.

Question No: 15 Replace now or later

Demeter Ltd. owns a machine of type DK which could be used in production for two more years at most. The machine originally cost Rs.45,000 five years ago. Its realizable value is currently Rs.8,000 (because a special opportunity for sale has arisen), but it would be zero at all subsequent times. If the machine were to be used for two more years, it would require a major overhaul at a cost of Rs.9,000 at the end of one year.

A new model of the machine is now being marketed. It costs Rs.40,000 and has a maximum life of ten years, provided that special maintenance is undertaken at a cost of Rs.10,000 after five years, and at a cost of Rs.20,000 after eight years. The new model would have no realizable value at any time. Assume that no other new model are expected to become available in the foreseeable future, and that no changes are expected in cost or demand for output of the machine. Demeter's cost of capital is 15% per annum.

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Prepare calculations to show whether Demeter's existing machine should be replaced now, or after one or two years.

Question No: 16 Term- Perpetuity

A company is considering a new project requiring an outlay of Rs.1Lac. The firm's existing cost of capital is 10% for its market value of Rs.10 lacs. The new project under consideration would place the firm into a new higher risk category, requiring a revised cost of capital at 11%.

1) What is the new project's minimum required rate of return?

Incase, the expected annual incremental cash flow due to the new project (perpetuity) is Rs.30000.Should the company accept the project?

Question No: 17 Comparison of NPV and IRR analysis

Consider the two projects described below:

Year	0	1	2	3	4
Project X (Rs. 000s)	-110	31	40	50	70
Project Y (Rs.000s)	-110	71	40	40	20

Calculate the NPV and IRR under the assumption that the reinvestment rate of intermediary funds is (i) 14% and (ii) 20%, when the cost of capital is 10% . How to resolve conflicts in NPV and IRR analysis?

Question No: 18 Replacement

Excel operations Ltd. is proposing to replace its fully depreciated machine by a new one costing Rs.1.5 Lacs. The current market value of the old machine is Rs.0.20 Lacs. The salvage value after 6 years is zero. The salvage value of the new machine after 6 years is expected to be Rs.16000. With the use of the new machine, sales are expected to increase by Rs.20000 per annum and operating expenses to decrease by Rs.12000 per annum. If the company follows a 30% WDV depreciation policy, has a marginal cost of capital of 12% and attracts a marginal tax rate of 30%, should the company replace the old machine?

**BRIEF TIME TABLE FOR NOVEMBER 2005 C.A. FINAL EXAMINATION.
SUBJECT : DIRECT TAX**

EXAMINATION	BRANCH	COMMENCING	ADMISSION STATUS
NOV 2005 (A.Y. 2005-2006)	ANDHERI	19-07-2005	In Progress
NOV 2005 (A.Y. 2005-2006)	CHARNI ROAD	24-05-2005	In Progress
NOV 2005 (A.Y. 2005-2006)	GHATKOPAR	17-07-2005	In Progress

Course Coverage for all the branches is the same.

All lectures are conducted by Professor Mr.Kalpesh Sanghavi Only.

Question No: 19 Product manufactures viability

A Cosmetic company is considering introducing a new lotion, which is useful both in winters and summers. The manufacturing equipment will cost Rs.560000. the expected life of the

equipment is 8 years. The company is thinking of selling the lotion in a single standard pack of 50 grams at Rs. 12 each pack. It is estimated that variable cost per pack would be Rs.6 and annual fixed cost, Rs.420000. Fixed cost includes (straight-line) depreciation of Rs. 70,000 and allocated overheads of Rs.30000. The company expects to sell 1 lakh packs of lotion each year. Assume that the tax paid is 45% and straight-line depreciation is allowed for tax purposes. The opportunity cost of capital is 12%. Should the company manufacture the lotion? Also calculate the time-adjusted break-even point.

Question No: 20 Buy or Make

A company is considering the possibility of manufacturing a particular component which at present is being bought from outside. The manufacture of the component would call for an investment of Rs. 7,50,000 in a new machine besides an additional investment of Rs. 50,000 in working capital. The life of the machine would be 10 years with a salvage value of Rs. 50,000. The estimated savings (after incremental depreciation but before tax) would be Rs 1,80,000 per annum. The income tax rate is 50%. The company's required rate of return is 10%. Depreciation is provided on straight-line system. Should the company make this investment? Working should part of your answer.

Question No: 21 Modify old or Replace

Aditya Mills has a number of machines that were used to make a product that the firm has phased out of its operations. An existing machine was originally purchased 6 years ago for Rs.5 Lacs. It is depreciated on SLM with remaining life of 4 years. No salvage value is expected at the end of 4 years from now. However it can currently be sold for Rs.1.5 Lacs. The machine can also be modified to produce another product at a cost of Rs.2 Lacs. The modification will not affect the useful life or the salvage value. After modification SLM would continue. If the present machine is not modified, it shall buy a new machine at a cost of Rs.4.4 Lacs (no salvage value), which shall be written off during the useful life of 4 years under SLM. The production in charge estimates that the new machine would save cash operating cost by Rs.25000 per annum. The cost of capital is 15% and the corporate tax is 55%. Advise the company whether the new machine should be bought or the old one modified? (For any inquiry or admission to kalpesh classes dial 2382 0676)

**Question No: 22 Install machine to process further or sell
Before process**

An iron ore company is considering investing in a new processing facility. The company extracts ore from an open pit mine. During a year, 1 Lac tones of ore is extracted. If the output from the extraction process is sold immediately upon removal of dirt, rocks and other impurities, a price of Rs.1000 per ton of ore can be obtained. The company has estimated that its extraction costs amount to 70% of the net realizable value of the ore. As an alternative to selling all the ore at Rs.1000 per ton, it is possible to process further 25% of the output. The additional cash cost of further processing would be Rs.100 per ton. The processed ore would yield 80% final output, and can be sold at Rs.1600 per ton. For additional processing the company would have to install equipment costing Rs.100 lacs. The equipment is expected to have a useful life of 5 years, with no salvage value. The company follows SLM of depreciation. Additional working capital requirement is estimated at Rs.10 Lacs. The company's cut-off rate for such investments is 15%. Corporate tax rate is 50%. Should be the company install the equipment for further processing of the iron-ore?

Question No: 23 Make or Buy

X & Co currently manufacture all components of its final product, but B & Co., has offered to provide one of the main sub-assemblies needed by X at what appears to be a very attractive price. However X is hesitant in buying from B because quite a lot of its own special purpose equipment will become redundant and have to be sold at a considerable loss. The following is the summary of the available information:

- a) B will supply the sub-assembly in any quantity needed as Rs.90 per unit. The forecasted value of demand is 10000 units per annum for the next 6 years.
- b) The current manufacturing costs of X & Co to produce 10000 sub-assemblies per year is as follows:

Items	Rs. in lacs
Materials	2
Direct Labour	4
Variable Overheads	2
Fixed Overheads (including depreciation)	4.5
Total	12.5

It is expected that the material prices will rise by 25%, and labour rates by 10% after 3 years. Overhead rates are not expected to increase.

- c) In case of purchases from outside all variable manufacturing costs can be avoided. Of the fixed overheads Rs.50000 cannot be avoided as it relates to the inside plant administration costs(all paid in cash) that were being allocated to the sub-assemblies. Depreciation charges on the special purpose equipment used only to manufacture sub-assemblies are Rs.4 Lacs. The current book value of the equipment is Rs.24 Lacs and would be depreciated on SLM. It can currently be sold for Rs.4 Lacs. The equipment would have no resale value after 6 years.
- d) The company is subjected to 50% tax. The minimum required rate of return is 15%. Using NPV analysis, determine whether it would be profitable to switch over from making sub-assemblies to buying the same from outside. Assume that the firm has a substantial taxable income.

Question No: 24 Total vs Incremental Approach with Opportunity Cost

A manufacturer of automobile parts acquired a special purpose-shaping machine for automatically producing a particular part. The machine has been used for 1 year. It will have no useful economic life after 3 years. The machine is being depreciated on SLM basis for income-tax purposes. It cost Rs.88000 has a current disposal price of Rs.29000, and has a terminal disposal price of Rs.6000. However, a terminal disposal price of zero was assumed in computing SLM depreciation for tax purposes.

A new machine has become available is far more efficient than the present machine. It would cost Rs.63000, would cut annual cash-operating costs from Rs.60000 to Rs.40000 and would have zero terminal disposal price at the end of its useful life of 3 years. SLM depreciation would be used for tax purposes. The applicable income tax is 30%. The after-tax required rate of return is 14%.

Required:

Using the net present value method, show whether the new machine should be purchased (a) under a project approach and (b) under a differential approach.

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Question No: 25 Multiple Alternatives

A toy manufacturing company is considering replacing an existing piece of equipment with one of the two new, more sophisticated machines. The old machine was purchased 3 years ago at a cost of Rs.70000. The machine originally had a projected life of 7 years and was to be depreciating SLM to zero salvage value. The two new pieces of equipment being considered are Machine X and Machine Y. Machine X would cost Rs.80000 to purchase, and Rs.20000 to install. Due to the expansion in operation, the management estimates the net working capital requirements of Machine X at Rs.10000. It has a 4-year life with no salvage value. It will be depreciated on SLM. Machine Y would be requiring working capital of Rs.20000 and capital cost of Rs.140000 including installation cost. The useful life is also estimated at 4 years with no salvage value.

The firm is taxed at 55% on normal gains and 30% on capital gains. Assume Cost of capital to be 10%, which machine, if either, should the company acquire? The projected profits before depreciation shall be Rs.25000, 50000 & 90000 respectively for the remaining 4 years to come. What would be your answer if the company has under consideration only the proposal to buy Machine X?

Question No: 26 Convert Machine into Versatile

A company manufactures four products A, B, C and D, which are marked in tubs. Of its total of 25 machines, ten are suitable for manufacturing all four products whilst the remaining 15 are unsuitable for products A and D.

Each machine is in production for 48 weeks per year and each is used on a given product in terms of full weeks and not in fractions of weeks. The company has no question in obtaining adequate supplies of labour and raw materials.

Marketing policy is that all four products should be sold, and the minimum annual production is 500 tubs of each. Fixed costs are budgeted at std.820,000 for the year.

Information on production, market price and direct costs is given below:

	A	B	C	D
Production (tubs per machine per week)	14	4	3	6
	(Rs.)	(Rs.)	(Rs.)	(Rs.)
Market price (per tub)	390	390	450	570
Direct Costs:				
Process 1: Direct Materials (per week)	238	108	96	156
Process 1 Direct Labour (per week)	448	304	186	264
Process 2 Direct Material (per tub)	10	10	10	10
Process 2: Direct Labour (per tub)	80	72	100	120
Transport (per tub)	130	130	100	240

Because the demand for product A and D is increasing, the company is considering converting into all-product machines those which, at present, are unsuitable for products A and D. The cost quoted for this work is Rs.70,000 per machine. The company expects a 12% return over a three year period for this type of expenditure.

Market research indicated that the company's expected sales over the next 3 years for products A and D would be 7000 tubs and 2100 tubs per annum respectively.

- Find out the optimum production to maximise the profit.
- Find out the number of machines to be converted into versatile machine.
- What is the minimum increase in the demand of A to justify the conversion of one additional machine from b above?

Question No: 27 Relevant Costing with inflation

Wymark Electronics Ltd. has been offered a fixed price contract to manufacture 12 specialised robotic work stations at Rs.1,02,732 each. Four work stations would be made and sold each year and the contract would run for 3 years from 1 July 2001. The following estimates have been made for the contract.

Equipment: Special equipment will have to be bought and paid for on 1st July 2001. The minimum amount required for the contract costs Rs.1,50,000 and this could be resold on 30th June 2000 for Rs.50,000. Ideally, Wymark wishes to keep initial investment as low as possible but work studies show that additional equipment would reduce semi-skilled labour costs by 1% for each additional Rs.1000 of equipment. Equipment, cover and above the minimum, can only be purchased in increments of Rs.1000 has no resale value and must be paid for on 1st July 2001.

Labour: Each of the work stations will require 2000 hours of skilled labour and 4000 hours of semi-skilled labour with the current rates of Rs.6 and Rs.4 per hour respectively. During the first year it is expected that skilled labour will be in short supply and that skilled labour for the contract will have to be redeployed from existing work where there is a contribution of Rs.8 per hour, net of labour costs. If the contract is accepted an existing technical manager who is to be retrenched shall be deployed on a permanent basis at Rs.18000 p.a. and his redundancy terms were to have been a Rs.30,000 lump sum payable on 1st July 2001 and a pension of Rs.4000 p.a.

Overheads: Overheads are absorbed at the rate of Rs.20 per skilled labour hour as follows:

Fixed Overheads Rs.13

Variable Overheads Rs.7

Wages salaries and overheads are expected to increase at 10% p.a. compound.

Materials

Material	Quantity per work station units	Current stock units	Original cost per unit	Current purchase price per unit	Current realizable value per unit
X	20	170	600	850	650
Y	15	60	500	550	200

Material X is used regularly by Wymark for its existing production but Y is used rarely and if not used for the new contract would have to be disposed of immediately. In addition to the two materials mentioned the work stations each require 10 microchip circuits which would have to be bought in. not price is yet available but Wymark is confident that it will be able to obtain a price that will be fixed for the duration of the contract. Replacement prices and current realizable values of X and Y are expected to increase at the rate of 15% p.a. compound.

Wymark has a cost of capital of 16% in money terms and it can be assumed that all payments and revenues price on the last day of the year to which they relate unless otherwise stated. Price changes are deemed to take place annually at midnight on 30th June

and because of its wish to enter this market, Wymark is prepared to accept this contract on breakeven basis.

You are required to

- (a) Calculate the maximum price per circuit that Wymark should be pay assuming that the circuits are purchased in three batches, payment is made at the end of each year and minimum amount of equipment is purchased.
- (b) Calculate the minimum amount of additional equipment which should be purchased assuming that it is discovered that the microchip circuits cannot be bought at less than Rs.1200 each.

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**Question No: 28 Block of Assets depreciation and its impact
in Capital Cost**

Excel Ltd. manufactures a special chemical for sale at Rs.30 per kg. The variable cost of manufacture is Rs.15 per kg. Fixed cost excluding depreciation is Rs.2.5 Lacs. Excel Ltd. is currently operating at 50% capacity. It produce a maximum of 100000 kgs at full capacity. The production manager suggests that if the existing machines are fully replaced, the company can achieve maximum capacity in the next five years gradually increasing the production by 10% per year. The finance manager estimated that for each 10% increase in capacity, the additional increase in fixed cost will be Rs.50,000. The existing machines with a current book value of Rs.10 Lacs can be disposed of for Rs.5 Lacs. The vice president (finance) is willing to replace the existing machines provided the NPV on replacement is about Rs.4,53,000 at 15% cost of capital after tax.

You are required to compute the total value of machines necessary for replacement. (To know more about us visit KalpeshClasses.com)

For your exercises you may assume the following:

- a) The company follows the block assets concept and all the assets are in the same block. Depreciation will be straight line basis and the same basis is allowed for tax purposes.
- b) There will be no salvage value for the machines newly purchased. The entire cost of the assets will be depreciated over five year period.
- c) Tax rate is at 40%.
- d) Cash inflows will arise at the end of the year.
- e) Replacement outflow will be at the beginning of the year
(Year 0)

Year	0	1	2	3	4	5
Discount factor at 15%	1.00	0.87	0.76	0.66	0.57	0.49

On the basis of data given above, the managing director feels that the replacement, if carried out, would at latest yield post tax return of 15% in the three years provided the capacity build up is 60%, 80% and 100% respectively. Do you agree?

Question No: 29 Benefit /Cost Ratio.

Traffic lights control the flow of traffic across and between two busy highways A and B. It is estimated that 50% of the traffic on each highway is delayed. The average loss of time per car delayed is 1 minute on highway A and 1.2 minutes on highway B. the traffic on A average 5000 cars a day and on B 4000. 20% of the cars are trucks and commercial vehicles, the rest are private. Whether on business or pleasure the occupants time has to be viewed as valuable. The cost of time for commercial vehicles is estimated at Rs.5 an hour and private at Rs.2 per private cars. Two fatal accidents due to failure to obey traffic signals occurred in the last 4 years and the insurance settlements were Rs.50,000 for each accident. Forty non-fatal accidents averaging a claim of Rs.1,500 occurred in the same period. These accidents resulted from traffic light violations and will be eliminated by an overpass.

This overpass is designed to replace the intersection and will add a quarter of mile to the distance of 15% of the total traffic. The overpass will cost Rs.7.5 Lacs and the extra maintenance will be Rs.2500 a year. The incremental operating cost for commercial vehicles will be 25 paise a mile and for non-commercial 6 paise a mile.

The cost of operating the traffic lights in Rs.6000 a year and a police man spends 2 hours a day at the crossing and the cost is apportioned at Rs.3 per hour. No policeman will be needed at the overpass.

The expected economic life of overpass is 25 years with a salvage value of zero. The cost of capital is 7% (the corresponding capital recovery factor is 0.0858). compute the benefit cost ratio.

Question No: 30 Comprehensive- use of relevant cost

ABC Ltd Ltd. is considering the manufacture of a new product. The accountant has prepared the following estimate of profit in the first year of manufacture.

	Rs.	Rs.
Sales: 9000 units at Rs.32		288,000
Cost of goods sold:		
Labour: 40000 hours at Rs.2	80000	
Materials and other variable costs	65000	
Depreciation	45000	
Fixed costs	40000	
	230000	
Less: Stock at year end	23000	207,000
Net Profit		81,000

The product is expected to have a life of 4 years. annual sales volume is expected to be constant over that period at 9000 units production, which was estimated at 10000 units in the first year then be only 9000 units in years 2 and 3 and 8000 units in the year 4 Debtors at the end of each year would be 20% of sales during previous year; creditors

would be 10% of materials and other variable cost. If the sales differed from the forecast level, stocks would be adjusted in proportion.

Depreciation relates to machinery which would be purchased especially for the manufacture of the new product and is calculated on the straight-line basis assuming that the machinery would last for four year and have no terminal scrap value. Fixed costs are included at Rs.1 per labour hour, the absorption rate currently used by the company: actual expenditure on fixed costs would not alter. ABC supply of labour is limited. The managers believe that enough products which generate cash contribution of Rs.1.50 per labour hour are available to absorb the productive capacity.

There is a high level of confidence concerning the accuracy of all the above estimates except the annual sales volume. ABC's cost of capital is 20% per annum. You may assume that operating cash flows and annually in arrear. No changes in the prices of inputs or outputs are expected over the next 4 years.

You are required to:

- (a) Prepare calculations to show whether manufacture of the new product is worthwhile.
- (b) Calculate the minimum annual sales volume at which manufacture would be worthwhile

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Question No: 31 Sensitivity Analysis in Capital Budgeting

Butcher Ltd. is considering whether to set up a division in order to manufacture a new product, the Azam. The following statement has been prepared, showing the projected "profitability" per unit of the new product:

	Rs.	Rs.
Selling Price		22.00
Material (3Kg @ Rs.1.50 per Kg)	4.50	
Labour (2 hours @ Rs.2.50 per hour)	5.00	
Overheads	11.50	21.00
Profit per unit		1.00

A feasibility study, recently undertaken at a cost of Rs.50000, suggests that a selling price of Rs.22 per unit should be set. At this price, it is expected that 10000 units would be sold each year. Demand for the product is expected to cease after 5 years. Direct Labour and materials costs would be incurred only for the duration of the product life.

Overheads per unit have been calculated as follows:

	Rs.
Variable overheads	2.50
Rent (see note a below)	0.80
Managers' Salary (See note b)	0.70
Depreciation (See note c)	5.00
Head Office cost (see note d)	2.50
	11.50

Notes:

- Azam would be manufactured in a factory rented specially for the purpose. Annual rental would be Rs.8000 payable only for as long as the factory was occupied.
- A manager would be employed to supervise production of Azams at a salary of Rs.7000 per annum. The manager is at present employed by the company but is due to retire in the near future on an annual pension of Rs.2000. If he continued to be employed his pension would not be paid during the period of employment. His subsequent pension rights would not be affected.
- Manufacture of the Azam would require a specialized machine costing Rs.250000. The machine would be capable of producing Azam for an indefinite period, although due to its specialized nature it would not have any resale or scrap value when the production of Azam ceased. It is the policy of Butcher Ltd. to provide depreciation on all fixed assets using the straight line method. The annual charge of Rs.50000 for the new machine is based on a life of 5 years, equal to the period during which Azams are expected to be produced.
- Butcher Ltd. allocates its head office fixed costs to all products at the rate of Rs.1.25 per direct labour hour. Total head office fixed costs would not be affected by the introduction of the Azam to the company's range of products.

The required return of Butcher Ltd. for all new projects is estimated at 5% per annum in real terms, and you may assume that all costs and prices given above will remain constant in real terms. All cash flows would arise at the end of each year, with exception of the cost of the machine which would be payable at the end of all the estimates given above, with the exception of those relating to product life, annual sales volume and material cost per Azam.

Required:

- Prepare NPV calculations, based on the estimates provided, to show whether Butcher Ltd. should proceed with manufacture of the Azam.

- (b) Prepare a statement showing how sensitive the NPV of manufacturing Azams is to errors of estimation in each of the three factors: Product Life, annual sales volume and material cost per Azam.

Question No: 32 Main player or keep reserve

Hypothetical Ltd. anticipates an increased in demand for one of its major product lines, and is thus interested in expanding its production capacity. It presently operates one model, M-100, and is considering two alternatives.

Alternative I: Acquire an additional model M-100 to operate in tandem with the existing one.

Alternative II: Acquire the newly-introduced model, M-500 which has double the output capacity of a M-100, but keep the old M-100 for emergencies, since tests have shown that the M-500 is a very sensitive machine.

The following information has been developed for the two alternatives.

	M-100	M-500
Acquisition cost	Rs.5,00,000	Rs.8,00,000
Operating costs per unit		
Material	4	8
Labour	8	3
Overhead	2	1
Annual operating fixed costs per machine(excluding depreciation)	50,000	50,000
Resale value after 10 years	Nil	Nil

The existing model, M-100, was purchased 4 years ago for Rs.4,00,000. If operated it will have to be replaced six years from now at an estimated cost of Rs.6,00,000. The machine which will replace the existing model, will have a market value of Rs.3,00,000 after 4 years. If the M-500 is acquired, it will cost Rs.20,000 per year to maintain the existing M-100 on standby status.

However, if M-100 is kept as a standby, it will not need to be replaced at the end of 6 years. The company believes that a 15% cost of capital rate is appropriate for this decision. The company follows straight line method of depreciation.

Forecast sales at Rs.20 per unit over the next 10 years are as follows:

Years	1-2	3-6	7-10
Units (in 000s)	45	50	70

The corporate tax rate is 50%. Advise the company as regards the alternative it should opt for.

Capital budgeting under uncertainty

Question No: 1 Application of Probability Distribution

Assume that discount rate is 10 percent and the cash flow are as follows:

Period (i)	Mean (Mi)	Standard Deviation (si)
0	-1600	Rs.400
1	1500	Rs.500
2	1000	Rs.600

Note: Mi is reached by taking an average of the various probable estimates of Cash flow for a particular year.

- Compute the mean of the present value distribution.
- Compute the standard deviation of the present value distribution.

Question No: 2 R. A. D Approach

A firm is considering a proposal to buy a machine for Rs.30,000. The expected Cash Flow after taxes from the Machine for a period of 3 consecutive years are Rs.20,000 each. After the expiry of the useful life of the machine, the seller has guaranteed its repurchase at Rs.2,000. The firm's cost of capital is 10% and the risk adjusting discount rate is 18%. Should the Company accept the proposal?

Question No: 3 C. E. Approach

A Company is examining 2 mutually exclusive investment proposals. The management of the company uses certainty equivalence to evaluate new investment proposals. From the following information pertaining to these projects, advice the company as to which project should be taken up.

Year	Proposal			
	Investment A		Investment B	
	Cash Flow	CE	Cash Flow	CE
0	(25,000)	1	(25,000)	1
1	15,000	0.8	9,000	0.9
2	15,000	0.7	18,000	0.8
3	15,000	0.6	12,000	0.7
4	15,000	0.5	16,000	0.4

The firm's cost of capital is 12% and risk free borrowing rate is 6%.

**Question No: 4 Application of Probability Distribution
(Normal)**

A Local Department is considering the renovation of its department. The renovation will cost the firm Rs.10 Lacs. Its incremental cash flow is very sensitive to the economic conditions as estimated below:

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Event	Probability of Event	Incremental Cash Flow (Rs. in Lacs)
A – Super Economic Boom	0.1	8
B - Mild Economic Expansion	0.2	5
C – Normal Economic Expansion	0.4	4
D – Mild Recession	0.2	3
E – Severe Recession	0.1	2

The firm thinks that the probability distribution of possible incremental cash flow exists for each of the 4 years during which the department will be functioning. The firm's cost of capital is 10%.

- (i) What is the expected annual incremental Cash Flow?
- (ii) What is the Project's expected NPV?
- (iii) If the project's Standard Deviation is Rs.1.80 Lacs, What is the Project's risk/rupee of expected return?
- (iv) What is the probability that the project will have a negative NPV?

Question No: 5 Application of Probability Distribution

Standard Deviation of the project is Rs.9343. NPV value is calculated at Rs.23,206. What is the probability that the project earns (i) less than 0 NPV; (ii) greater than 0; (iii) at least equivalent to mean; (iv) 10% below mean; and (v) 10% above the mean.

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**BRIEF TIME TABLE FOR NOVEMBER 2005 C.A. FINAL EXAMINATION.
SUBJECT : DIRECT TAX**

EXAMINATION	BRANCH	COMMENCING	ADMISSION STATUS
NOV 2005 (A.Y. 2005-2006)	ANDHERI	19-07-2005	In Progress
NOV 2005 (A.Y. 2005-2006)	CHARNI ROAD	24-05-2005	In Progress
NOV 2005 (A.Y. 2005-2006)	GHATKOPAR	17-07-2005	In Progress

Course Coverage for all the branches is the same.

All lectures are conducted by Professor Mr.Kalpesh Sanghavi Only.

Question No: 6 Application of Probability in Capital Budgeting

Toy Entertainment designs and manufacturer toys. Past experience indicates that the product life of a toy is 3 years. Promotional advertising produces an increase in sales in the early years but there is a substantial sales decline in the final year of a toy's life. Consumer demand for new toys placed in the market tends to fall into 3 classes. About 30% of the new toys sell well above expectation. 60% as anticipated and 10% have below acceptance. A new toy has been developed. The followings sales projections were made by carefully evaluating the consumer demand.

State of Demand	Probability	Estimated Sales (in Lacs)		
		I Year	II Year	III Year
Above average	0.30	12	25	6
Average	0.60	7	17	4
Below Average	0.10	2	9	1.5

Variable costs are estimated at 30% of the selling price. Special machinery must be purchased at Rs.8.60 Lacs. The company has been trying unsuccessfully for several years to rent out a vacant portion (where the plant was installed) at Rs.50,000 p.a. Fixed Expenses excluding depreciation are estimated at Rs.50,000 p.a. The machinery will be depreciated under straight line method with an estimated salvage value of Rs.1.10 Lacs at the end of the 3rd year.

Advertisement and Promotional charges will be incurred uniformly as follows: Rs.1,00,000 – 1st Year: Rs.1,50,000 – 2nd Year: Rs.50,000 – 3rd Year. The company is subject to a corporation tax of 50%. The cost of capital is 10%. Prepare a schedule computing the probable sales of this new toy in each of the 3 years. Also determine the NPV of the proposal.

Question No: 7 Risk Analysis

A company is considering a proposal to buy one of the two machines to manufacture a new product. Each of these machines requires an investment of Rs.50,000 and expected to provide benefits over a period of 12 years. the firm has made pessimistic, most likely, and

optimistic estimates of the returns associated with each of these alternatives. These estimates are as follows:

	Machine A (Rs.)	Machine B (Rs.)
Cost	50,000	50,000
Cash Flow estimates		
Pessimistic	8,000	0
Most likely	12,000	10,000
Optimistic	16,000	20,000

Assuming 14% cost of capital, which project do you consider more risky, and why?

Question No: 8 Risk Analysis in Capital Budgeting

A company has spent Rs.75,000 on research in developing a new product. The product will be marketable if it promises a risk-adjusted rate of return (applicable to such projects) of at least 25% after taxes. For the purposes of financial analysis, the following information has been collected.

1. The estimated life of the product is 3 years.
2. Projected sales are as follows:

Year	Sales Revenue
1	15,00,000
2	25,00,000
3	6,00,000

Variable cost to manufacture and sell the product are estimated at 60% of the selling price.

3. the present cash fixed costs will be increased by Rs.10,000 to cover insurance, and maintenance of new equipment.
4. advertising of the new product will be incurred uniformly, and will total Rs.1,25,000 in the first year, and Rs.75,000 and Rs.60,000 in years 2 and 3 respectively.
5. New machinery will have to be purchased at an estimated cost of Rs.9,60,000. The machinery will be depreciated at the rate of 33.33% on the basis of written down value method of depreciation. The salvage value is estimated at Rs.1,00,000.
6. The new machinery will be installed in a factory area now occupied by equipment that can no longer be used; viz. scrap equipment. The company has already arranged for removal of the old equipment at a cost of Rs.10,000.
7. the new product will be stored in a company owned warehouse in portion that is vacant now. The company has been trying unsuccessfully to rent this space at Rs.25,000 per year. Several offers have been rejected, the highest rent offer being Rs.15,000 per year, payable uniformly over the year under a three year lease.
8. The firm pays 50% tax on its income. It is assumed that these taxes will be paid uniformly as income is earned.
9. Present values of Re.1 at a 25% discount rate are as follows:

Year	Re.1 received at the end of year	Re.1 received uniformly over the year
1	0.80	0.88
2	0.64	0.69
3	0.51	0.54

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Evaluate the financial implications of the proposal, assuming that the operating cash flows occur uniformly throughout the period of the project's life.

Question No: 9 Abandonment decision

ABC Corporation is ordering a special-purpose piece of machinery costing Rs.9,000 with a life of 2 years, after which there is no expected salvage value. The possible incremental net cash flows are

YEAR 1		YEAR 2	
Cash Flow	Probability	Cash Flow	Conditional Probability
Rs.6,000	0.3	Rs.2,000	0.3
		3,000	0.5
		4,000	0.2
		4,000	0.3
7,000	0.4	5,000	0.4
		6,000	0.3
		6,000	0.2
8,000	0.3	7,000	0.5
		8,000	0.3

The company's required rate of return for this investment is 8 percent.

- Calculate the mean of the probability distribution of possible net present values.
- Suppose now that the possibility of abandonment exists and that the abandonment value of the project at the end of year 1 is Rs.4,500. Calculate the new mean NPV, assuming the company abandons the project if it is worthwhile to do so. Compare your calculations with those in part a. What are the implications?

Question No: 10 Project acceptance

The Pretty Company is considering a new location. If it constructs an office and 100 cages, the cost will be Rs.100,000 and the project is likely to produce net cash flows of Rs.17,000 per year for 15 years, after which the leasehold on the land expires and there will be no residual value. The company's required return is 18 percent. If the location proves favorable, Pretty will be able to expand by another 100 cages at the end of 4 years. The cost per cage would be Rs.200. With the new cages, incremental net cash flows of Rs.17,000 per year for years 5 through 15 would be expected. The company believes there is a 50-50 change that the location will prove to be a favorable one.

- Is the initial project acceptable?
- What is the value of the option? The worth of the project with the option? Is it acceptable?

Question No: 11 Capital budgeting under uncertainty

A company is trying to decide whether to invest in a new project. Two mutually exclusive projects are available, each requiring an investment of Rs.3,00,000. Project A is expected to generate cash inflows of Rs.2,00,000 per year in the next 2 years. It is estimated that the cash inflows associated with project B would either be Rs.1,80,000 is received in the

first year, the cash inflow for the second year is likely to be Rs.1,50,000 (probability of 0.3), Rs.1,80,000 (probability of 0.4) and Rs.2,00,000 (probability of 0.3). In case of first year cash inflow is Rs.2,20,000, the second year's likely cash inflow would be Rs.1,80,000 and Rs.2,70,000 (each with 0.3 probability), and Rs.2,20,000 (Probability 0.4). The firm uses a 14% minimum required rate of return for deciding whether to invest in projects comparable in risk to the ones under consideration.

- Calculate the risk adjusted expected NPV for project A and B.
- Identify the best and the worst possible outcomes for project B.
- Which of the projects, if any, would you recommend? Why?

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IN ASSOCIATION WITH KALPESH CLASSES**Question No: 12 Decision Tree under Capital Budgeting**

Big oil company is wondering whether to drill for oil in high sea. The prospectus are as follows.

Depth of oil well (feet)	Total cost (Rs. in million)	Cumulative probability of finding oil	Present value of oil, if found (Rs. in million)
1000	2	0.5	5
2000	2.5	0.6	4.5
3000	3	0.7	4

Draw a decision tree showing the successive drilling decision to be made by the company. How should it be prepared to drill?

Question No: 13 Decision Tree approach in Capital budgeting

A firm has an investment proposal, requiring an outlay of Rs.40,000. The investment proposal is expected to have 2 years economic life with no salvage value. In year 1 there is a 0.4 probability that cash inflow after tax will be Rs.25,000 and 0.6 probability that cash inflow after tax will be Rs.30,000. The probabilities assigned to cash inflow after tax for the year II are as follows:

Cash Inflow Year I	Rs.25,000		Rs.30,000	
Cash Inflow Year II		Probability		Probability
	Rs.12,000	0.2	Rs.20,000	0.4
	Rs.16,000	0.3	Rs.25,000	0.5
	Rs.22,000	0.5	Rs.30,000	0.1

The firm uses a 10% discount rate for this type of investment.

Required:

- Construct a decision tree for the proposed investment project.
- What net present value will be project yield if worst outcome is realized? What is the probability of occurrence of this NPV?

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- c) What will be the best and the probability of that occurrence?
 d) Will the project be accepted? (10% discount factor 1 year 0.909 and 2 year 0.826)

Capital Budgeting-Financing Decision

Question No: 1 Alternative source of Finance.

A co., has three alternative sources of funds available to finance a machine that costs Rs.90,000.

Alternative 1 Lease the equipment: Annual lease payments Rs.36,000 useful life 3 years term if lease three years, residual value nil, income tax rate 50% interest rate 10% on declining balance.

Alternative 2 Buy on investments: Down payment Rs.20,000 balance in 3 equal annual instalments, interest at 14% on declining balance. Useful life of the asset 3 years, with no residual value.

Alternative 3 Borrow from banks: Repay principal at the end of 3rd year, interest to be paid @15% p.a.

You are required to find out which alternative of financing the +acquisition of the machine is the most desirable, assuming after tax cost of capital 10% and depreciation on straight line method.

Question No: 2 Leasing

Beta Ltd. is considering the acquisition of a personal computer costing Rs.50,000. The effective life of the computer is expected to be five years. The company plans to acquire the same either by borrowing Rs.50,000 from its bankers at 15% interest per annum or by lease. The company wishes to know the lease rentals to be paid annually which will match the loan option. The following further information is provided to you:

- The principal amount of the loan will be paid in five annual equal instalments.
- Interest, lease rentals, principal repayment are to be paid on the last day of each year.
- The full cost of the computer will be written off over the effective life of computer on a straight-line basis and the same will be allowed for tax purposes.
- The company's effective tax rate is 40% and the after tax cost of capital is 9%.
- The computer will be sold for Rs.1,700 at the end of the 5th year. The commission on such sales is 9% on the sale value and the same will be paid.

You are required:

To compute the annual lease rentals payable by Beta Ltd. which will result in indifference to the loan option.

The relevant discount factors are as follows:

Year	1	2	3	4	5
Discount factor	0.92	0.84	0.77	0.71	0.65

Question No: 3 Leasing

A company wish to acquire an asset costing Rs.1,00,000. The company has an offer from a bank to lend @ 18% repayable in 5 years end instalments. A leasing Company has also submitted a proposal to the Company to acquire the asset on lease at a yearly rentals of Rs.280 per Rs.1,000 of the assets value for 5 years payable at year end. The rate of

depreciation of the asset allowable for tax purposes is 20% on W.D.V. with no extra shift allowance. The salvage value of the asset at the end of 5 years period is estimated to be Rs.1,000. Whether the Company should accept the proposal of Bank or leasing company, if the effective tax rate of the company is 50%.

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A company has received three proposals from leasing companies for the acquisition of an asset on lease costing Rs.1,50,000.

Option I: The terms of offer envisaged payment of rentals for 96 months. During the first 72 months the lease rental were to be paid @ Rs.30 p.m. per Rs.1,000 and during the remaining 24 months @ Rs.5 p.m. per Rs.1,000 on the expiry of lease period, the lessor has offered to sale the assets at 5% of the original cost.

Option II: Another offer envisaged lease agreement for a period of 72 months during which lease rentals were to be paid as follows:

Your lease rentals per Rs.1,000 p.m.

Years	1	2	3	4	5	6
(Rs.)	35	30	26	24	22	20

At end of lease period the asset is proposed to be abandoned.

Option III: Under this offer a lease agreement is proposed to be signed for a period of 60 months wherein a initial lease deposit to the extent of 15% will be made at the time of signing of agreement. Lease rentals @ Rs.35 per Rs.1,000 per month will have to be paid for period of 60 months on the expiry of leasing agreement, the assets shall be sold against the initial deposit and the asset is expected to last for a further period of three years.

You are required to evaluate the proposals keeping in view the following parameters.

(i) Depreciation @ 25%

(ii) Discounting rate @ 15%

(iii) Tax rate applicable @ 40%

The monthly and yearly discounting factors @ 15% discount rate are as follows:

Year/months	Monthly discounting factors	Yearly discounting factors
1	0.923	0.869
2	0.795	0.756
3	0.685	0.658
4	0.590	0.572
5	0.509	0.497
6	0.438	0.432
7	0.377	0.376
8	0.325	0.327
9	0.280	0.284
10	0.241	0.247
11	0.208	0.215
12	0.179	0.187

Question No: 5 Leasing

Company X needs a machine which if purchased outright will cost Rs.10 laksh. A Hire Purchase and Leasing Company has offered two alternatives as below:

Option A: Hire Purchase

Rs.2,50,000 will be payable on signing of the agreement. 3 annual instalments of Rs.4,00,000 will be payable at the year starting from year 1. The ownership in the machine will be transferred automatically at the end of the 3rd year. It is assumed that Company X will be able to claim depreciation on straight line basis with zero salvage value.

Option : Lease

Rs.20,000 will be payable towards initial service fee upon signing of the agreement. Annual lease rent of Rs.4,32,000 is payable at the end of each year starting from the first, for a period of 3 years.

Company X's tax rate is 35%.

Evaluate the two alternatives and advise the Company as to which one implies least cost.

Question No: 6 Leasing

Fair Finance Ltd. is a hire purchase and leasing company who have been approached by a local small scale business interested in acquisition of a machine through leasing. The price quoted by the manufacturer of the machine is Rs.3,00,000. 10% Sales tax is extra. The proposed lessee desires to have a primary lease period of 5 years.

Fair Finance's target rate of return on the transaction is 8% post-tax on the outlay. They wish to fix annual lease rents which are to be payable in arrears at the end of each year.

Their effective Income-tax rate is 50%. The Income-tax rate of depreciation on the machine is 25%.

Calculate the annual lease rent to be charged by Fair Finance Ltd.

Question No: 7 Leasing

A request has been received by Lotus Finance Ltd. who are engaged in leasing business, for structuring a lease of a machine costing Rs.30 lakhs. The average post-tax cost of funds to Lotus Finance (effective tax rate 50%) is 10%, but they wish to mark up this by 2% to cover the effects of inflation.

Calculate the annual lease rent to be charged assuming that

- (a) The lease period is to be 5 years;
- (b) The rents will be payable on the first day of each year; and
- (c) The machine will be fully depreciated in 5 years.

Question No: 8 Leasing

Kuber Leasing Ltd. is in the process of making out a proposal to lease a certain equipment to an user-manufacturer. The cost of the equipment is expected to be Rs.10 lakhs and the primary period of lease to be 10 years. Kuber Leasing is able to give you the following additional information: (To know more about us visit KalpeshClasses.com)

- (a) The machine can be depreciated fully over the 10 years on straight line basis (assume this to be acceptable for IT purposes)
- (b) The current effective tax rate for Kuber Leasing is 40% and they expect to go down to 30% from the beginning of the 6th year of the lease.
- (c) It is the normal objective of Kuber to make a 10% post-tax return in its lease pricing.
- (d) Lease management fee of 1% of the value of the asset is usually collected from the lessees upon signing of the contract of lease, to cover the overhead costs related to processing of the proposal.
- (e) Annual lease rents are collected at the beginning of every year.

You are required to determine the equated annual rent to be charged for the proposal.

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Question No: 9 Fixation of Lease Rentals

Elite Builders a leading construction co., having approved by a foreign embassy to build for them a block of 6 flats to be used as a guest houses. As per the terms of contract the foreign embassy would provide Elite builders the plans and the land costing of Rs.25 Lacs. Elite Builders would build the flats at their own cost and lease them out to foreign embassy for rental chargeable on annual basis and at the end of 15 years the buildings shall be transferred to the embassy for a nominal value of Rs.8 lacs. Elite builders estimates the cost of construction as follows: (We have teacher and taught relation ship and no business man like approach.)

Area per flat 1000 Sq Ft.

Construction cost Rs.400 Sq Ft.

Registration and Other charges 2.5 % of cost of construction.

Elite builders will also incur Rs.4 Lacs each in year 14 and 15 towards repairs. (For any inquiry or admission to kalpesh classes dial 2382 0676)

Elite builders proposes to charges the lease rentals as follows:

Year	Rental
1-5	Normal
6-10	120% of Normal
11-15	150% of normal

Elite builders present to rate averages at 50%. The full cost of construction and registration will be written off 15 years and will be allowed for the proposes. You are required to calculate the normal lease rental/annum/flat.

Assumption:-

- Minimum desired return 10%.
- Rentals and repairs will arise on the last day of the year.
- Construction & registration and other cost will be incurred at time "O".

Question No.10 Loan Vs. Lease

XYZ Co. is planning to install a machine which becomes scrap in 3 years. It require an investment of 180 lakhs and scrap realizes 18 lakhs. The company has following options:

- to take a loan @18% and buy that machine, or
- Take it on lease @444/1000 payable annually for 3 years.

Depreciation is 40% WDV. Tax rate is 35%. Determine which option is better.

Question No: 11 Project IRR and Equity IRR

Project outlay = 200crores. Debt equity ratio = 3:1. Cost of debt before tax 15%.

Cash inflow each year = Rs.40crores. Life of the project = 15years, Salvage value of the project is nil. Ignore taxation. Calculate project IRR and equity IRR on the assumption that the debt is paid in 15years period in equal instalments i.e., EMI

Question No 12 Base cases NPV and Adjusted NPV

Growmore Fertilizers Limited is considering a capital project requiring an outlay of Rs 15 million. It is expected to generate a net cash inflow of Rs 3.75 million for 6 years. The opportunity cost of capital is 18 per cent. Growmore Fertilizers can raise a term loan of Rs 10 million for the project. The term loan will carry an interest rate of 16 per cent and would

be repayable in 5 equal annual instalments, the first installment falling due at the end of the second year.

The balance amount required for the project can be raised by issuing equity. The issue cost is expected to be 8 per cent. The tax rate for the company is 50 per cent.

- (i) What is the base case NPV?
- (ii) What is adjusted net present value?

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Cost of capital, Bond valuation and Dividend Policy

Question No: 1 Introduction

(a) A share has a current market value of Rs.96 last dividend was Rs.12. Calculate the cost of Equity Capital.

(b) A share has a current market value of Rs.96 last dividend was Rs.12. If the expected annual growth rate of dividend is 4%. Calculate the cost of Equity Capital.

(c) AB Ltd. has in issue 10% Debentures of a Nominal Value of Rs.100. The market price is Rs.90 (ex-interest). Calculate the cost of Debentures if (i) Irredeemable: (ii) Redeemable at par after 10 years.

(d) Some 8% Convertible Debentures have a market value of Rs.106. Very recently interest was paid. The debentures will be convertible into Equity in 3 years time, at a rate of 4 shares per Rs.10 of Debentures. The shares are expected to have a market value of Rs.3.50 at that time and all the Debenture Holders are expected to convert their Debentures. What is the Cost of Capital to the company for the convertible Debentures? Assume a corporate tax rate of 33% (including Surcharge)

Question No: 2 Intra period compounding

(a) What is the maturity of Rs.10000 @ 10% when compounded annually, semiannually, quarterly, monthly, weekly, daily

(b) What is the equivalent continuous compounding for 10% p.a with semiannual compounding?

(c) What is the quarterly interest commitment when the principal of Rs.10000 paid @ 8% p.a. on continuous compounding basis

Question No: 3 Valuation of bond

Compute the value of a 5-year 7.4% coupon bond that pays interest annually assuming that the appropriate discount rate is 5.6%.

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Question No: 4 Valuation of bond- differential discount rates

What is the value of a 5-year 5.8% coupon bond if the appropriate discount rate for discounting each cash flow is as follows:

Year	1	2	3	4	5
Discount Rate in %	5.9	6.4	6.6	6.9	7.3

Question No: 5 Valuation of bond

What is the value of 5-year 7.4% coupon bond selling to yield 5.6% assuming the coupon payments are made semiannually?

Question No: 6 YTM

Determine whether the yield to maturity of a 6.5% 20-year bond that pays interest semiannually and is selling for Rs.9068 is 7.2%, 7.4%, or 7.8%.

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IN ASSOCIATION WITH KALPESH CLASSES**Question No: 7 Debenture Valuation**

VHP company had sold Rs.1,000 12% perpetual debentures 10 years ago. Interest rates have risen since then, so that debentures of this company are now selling at 15% yield basis.

Determine the current indicated / expected market price of the debentures. Would you buy the debentures for Rs.700?

Assume that the debentures of the company are selling at Rs.825. If the debentures have 8 years to run to maturity, compute the approximate effective yield an investor would earn on his investment?.

Question No: 8 Introduction

(a) Humpty Dumpty Ltd. has issued 14% preference shares of the face value of Rs.100 each to be redeemed after 10 years. Floatation cost is expected to be 4%. Determine the cost of preference shares.

(b) Equity shares of Humpty Dumpty Ltd. are currently selling for Rs.125 per share. The company expects to pay Rs.15 per share as dividend at the end of the coming year, and the estimated growth rate is 6%. It is expected that new equity shares can be sold at Rs.123; the company expects to incur Rs.3 per share as flotation cost. What is the cost of equity capital?

Question No: 9 Convertible Loan

The 10% convertible loan stock of Agarkar Ltd. is quoted at Rs.142 per 100 nominal. The earliest date for conversion is in four years time at the rate of 30 ordinary shares per

Rs.100 nominal loan stock. The share price is currently Rs.4.15. the annual interest on stock has just being paid.

Required:

What is the average annual growth rate in the share price that is required for stock holders to achieve an overall rate of return of 12% a year compound over next four years, including the proceeds of conversion.

What is the implicit conversion premium on stock?

Question No: 10 YTM, Duration and volatility

The following data is available for a bond.

Face value	Rs 1,000
Coupon (interest rate)	16 per cent payable annually
Years to maturity	6 years
Redemption value	Rs 1,000
Current Market price	Rs 964.5

What is the yield to maturity, duration, and volatility of this bond?

**BRIEF TIME TABLE FOR NOVEMBER 2005 C.A. FINAL EXAMINATION.
SUBJECT : DIRECT TAX**

EXAMINATION	BRANCH	COMMENCING	ADMISSION STATUS
NOV 2005 (A.Y. 2005-2006)	ANDHERI	19-07-2005	In Progress
NOV 2005 (A.Y. 2005-2006)	CHARNI ROAD	24-05-2005	In Progress
NOV 2005 (A.Y. 2005-2006)	GHATKOPAR	17-07-2005	In Progress

Course Coverage for all the branches is the same.

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Question No: 11 YTM, Duration and volatility

Consider two bonds, P and Q.

	Bond P	Bond Q
Face value	1,000	1,000
Coupon (interest rate)	16 per cent payable annually	12 per cent payable annually
Years to maturity	8	5
Redemption value	1,000	1,000
Current market price	Rs 918.5	Rs 761

What are the yields to maturity, durations, and volatilities of these bonds?

Question No:12

M/s. Agfa Industries is planning to issue a debentures series on the following terms:

Face Value Rs. 100
Term of maturity 10 Yrs.

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Yearly coupon rate

Years	
1-4	9 %
5-8	10 %
9-10	14 %

The current market rate on similar debentures is 15 per cent per annum. The Company proposes to price the issue in such a manner that it can yield 16 per cent compounded rate of return to the investors. The Company also proposes to redeem the debentures at 5 per cent premium on maturity. Determine the issue price of the debentures

Question No13 Cost benefit on redemption /replacement of bond

Magnavision Electronics has Rs 300 million, 16 per cent bonds outstanding with a balance maturity of 5 years. As interest rates have fallen, Maganvision can refund its bonds with a Rs 300 million issue of 5 years bonds carrying a coupon rate of 14 per cent. The call premium will be 5 per cent. The issue cost on the new bonds will be Rs 6 million. The unamortised portion of the issue costs on the old bonds is Rs 5 million and these can be written off no sooner the old bonds are called. Magnavision's marginal tax rate is 35 per cent. Analyse the bond refunding decision.

Question No: 14 Cost benefit on redemption /replacement of bond

Zenith Pharmaceuticals has a Rs 250 million, 17 per cent bond outstanding with 8 years remaining to maturity. As interest rates have fallen, Zenith can refund its bond with a Rs 250 million issue of 8-year bonds carrying a coupon rate of 15 per cent. The call premium will be 6 per cent. The issue costs on the new bonds will be Rs 10 million. The unamortised portion of the issue costs on the old bonds is Rs 8 million and these can be written off no sooner the old bonds are called. Zenith's marginal tax rate is 40 per cent. Analyse the bond refunding decision.

Question No: 15 Selection of better alternative

Down Ltd is unable to pay the interest on its debt capital, which consists of Rs.5,000,000 of 10% debenture stock. The debenture holders are entitled, under the terms of their trust deed, to appoint a receiver, but the current financial position of company is so poor that the enforced liquidation of the company would not realise more than a small fraction of the amount owed to the debenture holders. The debenture holders are therefore willing to consider alternative.

The company was suggested that either of two options might satisfy them. The debenture holders would surrender their debentures, in exchange for:

- (a) 15,000,000 ordinary shares under option 1;
- (b) Rs.5,000,000 of non-interest-bearing convertible debentures under option 2. The debentures would be convertible into ordinary shares in two years time at the rate of 200 shares per Rs.100 of stock. Alternatively, the debentures (which would not be secured) would be repayable at par after two years.

Estimate of the net realisable value of company's assets in two years time are as follows:

Probability	0.2	0.4	0.3	0.1
NRV Rs.M	2	4	6	8

If the company does not go into liquidation, its value as a going concern after two years is estimated to be 150% of the net realisable value of its assets, and the share price will reflect this value.

Company would not be allowed to issued any additional shares, nor pay any dividend, for the next two years. There are currently 10,000,000 shares in issue.

Which option would the debenture holders prefer, on the assumption that they choose the one that maximises the expected value of their wealth?

Question No: 16 WACC

The Servex Company has the following capital structure on June 30th,1998:

	Rs
Ordinary shares (2,00,000 shares)	40,00,000
10% Preference shares	10,00,000
14% debentures	<u>30,00,000</u>
	<u>80,00,000</u>

The share of the company sells @Rs. 20, and it is expected that the company will pay next year a dividend of Rs.2 per share which will grow @ 7% forever. Assume a 50% tax rate.

You are required to:

Compute a weighted average cost of capital based on the existing capital structure.

Question No:17 WACC – Book Value Basis and Market Value Basis

A paper company has the following specific cost of capital along with the indicated book and market value weights:

Type of Capital	Cost	Book value weights	Market value weights
Equity	18%	0.50	0.58
Preference Shares	15%	0.20	0.17
Long-term debt	7%	0.30	0.25
		1.00	1.00

Calculate the weighted cost of capital, using book and market value weights.

Calculate the weighted average cost of capital, using marginal weights, if the company intended to raise the needed funds using 50% long-term debt, 35% preference shares and 15% retained earnings.

Question No: 18 Optimal Cost of Capital

While designing the most optimal capital structure for a company, the following estimates of the cost of equity capital and debt (after tax) have been made at various levels of debt equity mix:

S. No.	Debt as % of total capital employed	Cost of Debt %	Cost of equity %
1.	0	5	16
2.	10	7	16
3.	20	8	16
4.	30	10	17
5.	40	10	18
6.	50	11	19
7.	60	12	20

You are required to determine the optimal debt equity mix for the company by calculating composite cost of capital.

Question No: 19 Arbitrage – Levered to Unlevered

The two companies, Sadam and Bush, belong to the equivalent risk class. These two firms are identical in every fashion except that Sadam Company is unlevered while company Bush has 10% debentures of Rs.30 lakhs.

The other relevant information regarding their valuation and capitalisation rates are as follows:

	Sadam (Rs.)	Bush (Rs.)
Net operating income (EBIT)	750,000	750,000
Interest on Debt. (I)	Nil	300,000
Earnings to equity holders (NI)	750,000	450,000
Equity-capitalisation rate(K)	0.15	0.20
Market value of equity (S)	5,000,000	2,250,000
Market value of Debt	Nil	3,000,000
Total value of the firm	5,000,000	5,250,000
Implied overall capitalisation rate (K)	15.0	14.28%
Debt-equity ratio (B/S)	0	1.33

An Investor owns 10% equity shares of company Bush. Show the process and the amount by which he could reduce his outlay through the use of leverage.

According to Modigliani and Miller, when will this arbitrage process come to an end?

Question No: 20 Arbitrage – Unlevered to Levered

The two companies Jaswant Ltd. and Yaswant Ltd. belong to the same risk class. They have everything in common except that Yaswant Ltd. has 10% debentures of Rs.5 lakhs. The valuation of the two firms is assumed to be as follows:

	Jaswant Ltd. (Rs.)	Yaswant Ltd. (Rs.)
Net operating income (EBIT)	750,000	750,000
Interest on Debt. (I)	Nil	50,000
Earnings to equity holders (NI)	750,000	700,000
Equity-capitalisation rate(K)	0.125	0.14
Market value of equity (S)	6,000,000	5,000,000
Market Value of debt (B)	Nil	500,000

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Total Market value of the firm (V)	6,000,000	5,500,000
Implied over-all capitalisation rate (K)	12.5%	13.63%
Debt-equity ratio (B/S)	0	0.1

An investor owns 10% equity shares of the over-valued firm. Determine his investment cost of earning the same income so that he is at a break-even point? Will he gain by investing in the undervalued firm?

Question No: 21 Arbitrage – Levered to Levered

Particulars	U Ltd.	L Ltd.
(a) Operating income	10,00,000	10,00,000
(b) Debenture interest	-	3,00,000
(c) Equity earning	10,00,000	7,00,000
(d) Debt Capitalisation rate	-	10%
(e) Equity Capitalisation rate	14%	18%
(f) Market value of debt	-	30,00,000
(g) market value of equity	71,42,857	3888889
h) Total Market Value of the firm	71,42,857	6888889
i) Average cost of capital	14%	14.52%

You own Rs.1 lac worth in overvalued firm. What arbitrage will be resorted to?

Question No: 22 Invest or not – Application of DGM

You are considering the following three investments.

The first is a debenture (bond) that is selling in the market at Rs.1,100. The bond has Rs.1,000 per value, pays interest at 14% per annum and is scheduled to mature in 15 years. For bonds of this risk class, you believe that a 15% rate of return is required.

The second investment that you are analysing is preferred stock having a par value of Rs.100, that is currently selling for Rs.90 and pays an annual dividend of Rs.13. Your required rate of return for this stock is 15%.

The third investment is an equity stock (Rs.10 per value) that recently paid a dividend of Rs.2. The firm's earnings per share have increased from Rs.3 to Rs.6 in 10 years. The firm's dividend per share also has the same growth rate for the indefinite future. The stock is selling for Rs.20 and you think a reasonable required rate of return for the stock is 20%. (Growth rate to be rounded off to the nearest whole number).

Calculate the value of each security based on your required rate of return. Clearly indicate any assumptions you make.

Indicate whether these securities are over-priced or under-priced, depending on which state whether you will buy the security or not.

If the anticipated growth rate for the equity stock changes to 12%, would your answers to (a) and (b) above be different?

Question No: 23 DGM

Delphi Products Corporation currently pays a dividend of \$2 per share and this dividend is expected to grow at a 15% annual rate for 3 years, then at a 10% rate for the next 3 years, after which it is expected to grow at a 5% rate for ever.

What value would you place on the stock if an 18% rate of return were required?

Would your valuation change if you expected to hold the stock only 3 years?

Question No: 24 Elementaries on Dividend Policy

Mr.R is thinking of investing in the equity shares of D Ltd. The face value of the shares is Rs.10. He requires a return of 25% on his investment. D Ltd. declared dividend of Rs.5 per share for the year 1998-99 and it is expected that the dividends of the company will grow at the rate of 30% for the next five years and after that @20% forever. Compute the maximum price at which Mr.R may buy the shares of the company. (To know more about us visit KalpeshClasses.com)

Question No: 25 Application of DGM on Capital budgeting

A Ltd. is an all equity Financed Company. The current market price of share is Rs.180. it has just paid a dividend of Rs.15 per share and expected future growth in dividend is 12%. Currently, it is evaluating a proposal requiring funds of Rs.20 lakhs, with annual inflows of Rs.10 lakhs for 3 years. Find out the Net Present Value of the proposal, if (i) It is financed from retained earnings; and (ii) It is financed by issuing fresh equity at market price with a floatation cost of 5% of issue price.

Question No: 26 Cost of Capital – Growth Model

You are given the following information about two companies which are financed entirely by equity capital:

	Trendy Ltd. (000's)	Jumbo Ltd. (000's)
No. of ordinary shares of Rs. 1 (000)	150,000	500,000
Market value per share ex div	3.42	0.65
Current earnings	62,858	63,952
Current Dividend	6158	48130
Balance sheet value of capital employed	315,000	293,000
Dividend 5 years ago	2473	37600

Estimate the cost of capital for both companies using growth

Describe giving your reasons any additional evidence to which would refer in order to increase your confidence in the estimates of cost of capital in practice .

Question No: 27 DGM and its application in Cost of capital

A Company's share is quoted in market at Rs.60 currently. A company pays a dividend of Rs.5 per share and investors expect a growth rate of 12% per year. Compute:

- The company's cost of equity capital.
- If anticipated growth rate is 13% p.a. calculate the indicated market price per share.
- If the company's cost of capital is 18% and anticipated growth rate is 15% p.a., calculate the market price per share, if dividend of Rs.5 per share is to be maintained.

Question No: 28 Identify Growth rate

The risk free return is 10% and the risk premium is 5% with beta of a company is 1.6. The company had declared the latest dividend @ Rs.3 (2000) whereas it had declared a dividend of Rs.2.115 in the year 1994. The company's earnings and the dividend experienced constant growth. Find out the intrinsic value of the shares. Take into account the following PV factor table value if useful.

Percentage of Cost of capital	PV Values at the end of 6 years
5 %	0.746
6 %	0.705
7 %	0.666

Question No: 29 Dividend Policy – Walter Approach

The earnings per share of a company are Rs.8 and the rate of capitalisation applicable to the company is 10%. The company has before it an option of adopting a payout ratio of 25% or 50% or 75%. Using Walter's formula of dividend payout compute the market value of the company's share if the productivity of retained earnings is (i) 15% (ii) 10% and (iii) 5%.

Explain fully what inferences can be drawn from the above exercise?

Question No: 30 Dividend Policy – Gordon Approach

The following information is available in respect of the rate of return on investments (r), the capitalisation rate (k) and earnings per share (E) of Hypothetical Ltd.

r = (i) 12% (ii) 10% (iii) 8%; k = 10%; E = Rs.20

Determine the value of its shares, assuming the following:

Situation	1	2	3	4	5	6	7
Retention Ratio (b)	10	20	30	40	50	60	70
D/P ratio (1-b)	90	80	70	60	50	40	30

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Question No: 31 Dividend Policy – Walter Model

From the following information supplied to you, determine the theoretical market value of equity shares of a company as per Walter's Model:

Earnings of the company	Rs.500,000
Dividends paid	Rs.300,000
Number of shares outstanding	100,000
Price earning ratio	8
Rate of return on investment	15%

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Are you satisfied with the current dividend policy of the firm? If not, what should be the optimal dividend payout ratio in this case?

Question No: 32 Application of Walter /Gordon formula

A company has a book value per share of Rs.137.80. its return on equity is 15% and it follows a policy of retaining 60% of its earnings. If the Opportunity Cost of Capital is 18%, what is the price of the share today?

Question No.33 Residual dividend model

Axel Telecommunications has a target capital structure which consists of 70% debt and 30% equity. The company anticipates that its capital budget for the upcoming year will be Rs.30,00,000. If Axel reports net income of Rs.20,00,000 and it follows a residual dividend payout policy, what will be its dividend payout ratio?

Question No: 34 Walter /Gordon application

With the help of following figures calculate the market price of a share of a company by using.

- (i) Walter's formula
- (ii) Dividend growth model (Gorden's formula)

Earnings per share (EPS)	Rs.10
Dividend per share (DPS)	Rs.6
Cost of capital (k)	20 %
Internal rate of return on investment	25 %
Retention Ratio	60 %

Question No: 35 Walter /Gordon application

Following are the details regarding three companies X Ltd., Y Ltd., and Z Ltd.

	X Ltd.	Y Ltd.	Z Ltd.
Internal Rate of return (%)	5	20	15
Cost of equity capital (%)	15	25	15
Earnings per share	Rs.10	Rs.10	Rs.10

Calculate the value of an equity share of each of those companies applying Walter's formula when dividend payment ratio (DIP) ratio is (a) 75% (b) 50% (c) 80%.

Question No: 36 DGM

Prudential Ltd presently pays a dividend of Re.1.00 per share and has a share price of Rs.20.00.

- i. If this dividend were expected to grow at a rate of 12% per annum forever, what is the firm's expected or required return on equity using a dividend-discount model approach?
- ii. Instead of this situation in part (i), suppose that the dividends were expected to grow at a rate of 20% per annum for 5 years and 10% per year thereafter. Now what is the firm's expected, or required, return on equity?

Question No: 37 Lintner Model**NOW MANY MORE SUBJECTS AVAILABLE****KALPESH CLASSES****VISIT KALPESHCLASSES.COM TO DOWN LOAD CONTENT**

What will be the dividend per share of Rohan Industries for the year 2003 given the following information about the company?

EPS of 2003 = Rs.3

DPS for 2002 = Rs.12

Target payout ratio = 0.6

Adjustment rate = 0.7

Apply the Lintner Model.

Question No: 38 Lintner Model

Zenith Ltd., has earnings per share of Rs.3.00 for year t . Its dividend per share for year $t-1$ was Rs.1.20. The target payout ratio and the adjustment rate for this firm are 0.6 and 0.7, respectively. What would be the dividend per share for Zenith Ltd. for year t Lintner's model applies to it?

Question No: 39 MM model on dividend

ABC Ltd. has a capital of Rs.10 lakhs in equity shares of Rs.100 each. The shares currently quoted at par. The company proposes declaration of a dividend of Rs.10 per share at the end of the current financial year. The Capitalisation rate for the risk class to which the company belongs is 12%. (For any inquiry or admission to kalpesh classes dial 2382 0676) What will be the market price of the share at the end of the year, if

(i) A dividend is not declared?

(ii) A dividend is declared?

(iii) Assuming that the company pays the dividend and has net profits of Rs.5,00,000 and makes new investments of Rs.10 lakhs during the period, how many new shares must be issued? Use the M.M. model.

Question No: 40 MM model in Dividend

The shares of firms X and Y are considered to be equally risky. Investors expect the share of firm X – the firm which does not plan to pay dividend to be worth Rs.180 next year. From a share of firm Y, too, investors expect a payoff of Rs.180 – Rs.15 by way of dividend and Rs.165 by way of share price a year from now.

Dividends are taxed at 20% and capital gains at 10%. What will be the current price of the shares of X and Y, if each of them offers an expected post-tax rate of return of 15%. Assume that the radical position applies.

Questions No: 41 Rights issue – Dilution per Share

Jaspal Ltd. had issued 30 Lacs ordinary shares of Re.1 each that are at present selling for Rs.4 per share. The company plans to issue rights to purchase one new equity share at a price of Rs.3.2 per share for every three shares held., A share holder who owns 900 shares thinks that he will suffer a loss in his personal wealth because new shares are being offered at a price lower than market value. On the assumption that the actual market value of the shares will be equal to the Ex-rights price. What could be the effect on the share holders wealth if A) He sells all the rights; B) he exercises half of the rights and sells other half C) He does nothing at all.

Question No: 42 Gain on Rights Issue

Lotus Ltd. is financed entirely by 12.5 million ordinary shares with a market price of Rs. 2 each . the company is expected to pay constant dividends of Rs. 3 million per annum to perpetuity. This year's dividend has last been paid. A project is under consideration, which would increase dividends by 100,000 per annum to perpetuity. It requires an outlay including issue costs of Rs. 600,000, which will be financed entirely by a new issue of ordinary shares to the general public.

Calculate the gains made by the original shareholders and the new shareholders if the new shares are issued:

at Rs. 2 each ; at Rs. 1.92 each

At what price should the new shares be issued:

If all the gain from the project to the original shareholders?

If all the gain goes to the new shareholders?

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Risk Analysis under Portfolio Theory and Capital Asset Pricing Model

Question No: 1 Elementaries on Statistical Approach to Risk Analysis

- a. The forecast of Sky Ltd. according to various possible states of the economy is as follows:

Status of the Economy	Probability	Return
Good	0.1	20
Average	0.4	16
Bad	0.3	10
Worse	0.2	3

What is the expected return, Variance and the Standard Deviation of the above Security?

- b. The following data relate to two securities, A and B:

Probability	Return on Security	
	A	B
0.3	10%	6%
0.4	14%	20%
0.3	21%	15%

Find out Co-Variance.

- c. The possible returns on two securities are as follows:

Probability	Security	
	(1)	(2)
0.2	14%	15%
0.5	20%	13%
0.3	25%	26%

Find out Mean, Standard Deviation, Co-Variance and Correlation.

- d. An investor wishes to invest in a portfolio comprising 60 percent security A and 40 percent security B. The expected returns of A and B are 16 percent and 23 percent respectively. Find out return of the Portfolio.

- e. An investor wishes to know the risk of a portfolio comprising 50 percent security A and 50 percent security B.

Where:

$$\begin{aligned}\sigma_A &= 9\% \\ \sigma_B &= 5\% \\ \text{COR (A, B)} &= 0.2\end{aligned}$$

- f. Securities X and Y are to be combined in a portfolio on a 50 : 50 ratio.

	Risk	Return
X	10%	20%
Y	4%	12%

Find out the risk associated when the co-efficients of correlation are +1 or 0 or -1.

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EXAMINATION	BRANCH	COMMENCING	ADMISSION STATUS
NOV 2005 (A.Y. 2005-2006)	ANDHERI	19-07-2005	In Progress
NOV 2005 (A.Y. 2005-2006)	CHARNI ROAD	24-05-2005	In Progress
NOV 2005 (A.Y. 2005-2006)	GHATKOPAR	17-07-2005	In Progress

Course Coverage for all the branches is the same.

All lectures are conducted by Professor Mr.Kalpesh Sanghavi Only.

Question No: 2 Elementary on statistical analysis

Calculate expected return and standard deviation of the following two investments 'A' and 'B' exclusively and also if total investment is divided one half in each.

The Economic predictions are:-

Economic Climate	Probability of Economic Climate	Returns from A %	Returns from B%
Recession	0.2	10	6
Stable	0.5	14	15
Expansion	0.3	20	11
	1.00		

Question No: 3

Using the data from the previous calculate covariance and correlation and then compute return and risk of all the following portfolios based on correlation covariance.

	Investment	A	B
(i)	Proportion	0.2	0.8
(ii)	Proportion	0.7	0.3
(iii)	Proportion	0.5	0.5

Question No: 4 Elementaries on Statistical Approach to Risk Analysis

You are evaluating two shares with the following expected returns and variances:

	Titco	Telco
Expected return	8 %	11 %
Variance	9 %	16 %

Required:

- (a) What is the expected return and variance of a portfolio constructed with equal amount of Titco and Telco if the correlation co-efficient is (i) 1; (ii) 0.5; (iii) -0.5; (iv) -1.

Question No: 5 Elementary on CAPM

- (a) "Higher the return, higher will be the risk". In this context discuss the various risks associated with portfolio planning.
- (b) Following is the data regarding six securities:

	A	B	C	D	E	F
Return (%)	8	8	12	4	9	8
Risk (%) (Standard Deviation)	4	5	12	4	5	6

- (i) Which of the securities will be selected?
- (ii) Assuming perfect correlation, analyse whether it is preferable to invest 75% in security A and 25% in security C.

Question No: 6 CAPM

a) Assume: The risk-free interest rate is 9%

The expected return on the market portfolio is 18%

If a security has a beta factor of (a) 1.4, (b) 1.0, or (c) 2.3, find out the expected return on any capital asset.

b) The following data relate to two securities, A and B

	A	B
Expected return	22%	17%
Beta factor	1.5	0.7

Assume: The risk-free interest rate is, 10%

The expected return on the market portfolio is, 18%

Find out the required return and also comment on the pricing as under valued, overvalued or otherwise.

Question No:7

The rates of return on the security of Company X and market portfolio for 10 periods are given below:

Period	Return of Security X (%)	Return on Market Portfolio (%)
1	20	22
2	22	20
3	25	18
4	21	16
5	18	20
6	-5	8
7	17	-6
8	19	5

9	- 7	6
10	20	11

(i) What is the beta of Security X?

What is the characteristic line for Security X?**Question No: 7 Portfolio theory**

	2000	2001
P Ltd.	11%	17%
Q Ltd.	20%	8%

Calculating the following:

- Expected return of portfolio made up of 50 percent of P and 50 per cent of Q.
- Expected return of portfolio made up of 60 per cent of P and 40 per cent of Q.
- Find out standard deviation of each stock.
- What is the covariance and coefficient of correlation between P and Q.
- If P & Q stock is invested in the ratio of 2/3 : 1/3 what is portfolio risk.
- If the ratio of investment in P & Q is 1 : 1 then what is the overall portfolio risk and why it has gone up.

Question No: 8 Portfolio Theory

L Ltd. and M Ltd. have the following risk and return estimates.

$$R_L = 20\%$$

$$R_M = 22\%$$

$$\sigma_L = 18\%$$

$$\sigma_M = 15\%$$

$$(\text{Correlation Coefficient}) = r_{LM} = -1$$

Calculate the proportion of investment in L Ltd. and M Ltd. to minimise the risk of portfolio.

Question No: 9 CAPM

The following table gives an analyst's expected return on two shares for particular market return:

Market return	Aggressive share	Defensive share
6%	2%	8%
20	30	16

- What are the betas of the two share?
- What is the expected return on each share if the market return is equally likely to be 6% or 20%?
- If the risk-free rate is 7% and the market return is equally likely to be 6% or 20% what is the SML?
- What are the alphas of the two shares.

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IN ASSOCIATION WITH KALPESH CLASSES**Question No: 10 CAPM**

The following table gives an analyst's expected return on two shares for particular market return:

Market return	Aggressive share	Defensive share
5 %	- 5 %	8 %
25	40	18

- What are the betas of the two shares?
- What is the expected return on each share if the market return is equally likely to be 5% and 25%?
- If the risk-free rate is 8% what is the SML?
- What are the alphas of the two shares?

Question No: 11 CAPM

(a) Explain briefly the two basic principles of effective portfolio management.

(b) As an investment manager you are given the following information:

Investment in Equity Share of	Initial Price (Rs.)	Divds (Rs.)	Market price at the end of the year (Rs.)	Beta risk factor
A. Cement Ltd.	25	2	50	0.8
Steel Ltd.	35	2	60	0.7
Liquor Ltd.	45	2	135	0.5
B. Govt. of India bonds	1,000	140	1,005	0.99

Risk free return may be taken at 14%.

You are required to calculate:

- Expected rate of returns of portfolio in each using Capital Asset Pricing Model (CAPM).
- Average return of Portfolio.

Question No: 12 Fundamentals on Portfolio Theory

An investor is seeking the price to pay for a security, whose standard deviation is 3.00 per cent. The correlation coefficient for the security with the market is 0.8 and the market standard deviation is 2.2 per cent. The return from government securities is 5.2 per cent and from the market portfolio is 9.8 per cent. The investor knows that, by calculating the required return, he can then determine the price to pay for the security. What is the required return on the security?

Question No: 13 Decision model on CAPM

The Beta Coefficient of Target Ltd. is 1.4. The company has been maintaining 8% rate of growth in dividends and earnings. The last dividend paid was Rs.4 per share. Return on Government securities is 10%. Return on market portfolio is 15%. The current market price of one share of Target Ltd. is Rs.36.

- (i) What will be the equilibrium price per share of Target Ltd.?
- (ii) Would you advise purchasing the share?

Question No: 14 Multiple Combinations of Securities in a Portfolio

A client has presented you with three alternatives shares that he is proposing to invest in. He has instructed you to analyse the possibilities if he were to invest an equal amount in any two of these shares:

Details are:

Share	Expected return next year	Standard Deviation of return
A	12.6%	7.9%
B	10.3%	3.4%
C	9.7%	1.9%

The correlation co-efficient of returns between share are

A and B 0.98

A and C 0.79

B and C 0.89

Required:

- (1) Prepare calculation to identify which combination of shares is to be preferred.
- (2) Explain how portfolio diversification can reduce risk.
- (3) Clearly explain what is meant by capital market line.

Question No: 15 Report on Over Valuation / Under Valuation using Portfolio Theory

You are analysing two alternative PortFolios. Each consists of 4 securities. Data are:

Port Folio 1

Security	Beta of security	Expected Return (%)	Amount invested Million Rs.
A	1.4	16	3.8
B	0	6	5.2
C	0.7	10	6.1
D	1.1	13	2.9

Port Folio 2

Security	Beta of security	Expected Return (%)	Amount invested Million Rs.
E	1.2	14	7.1
F	0.8	11	2.7
G	0.2	7	5.4
H	1.5	17	2.8

The market return is expected to be 12.5% and the risk free rate is 5.5%.

Required:

- Calculate the beta of each portfolio and the required return on each portfolio.
- Explain whether the individual shares in portfolio 1 appear to be over or under valued and what action this would imply for the portfolio manager?
- A colleague has commented that the actual return on each security has often been quite different to that predicted by its beta value. Explain why that is not unusual.

Question No: 16 Elementary on Portfolio

The market portfolio is expected to yield a return of 18% with a standard deviation of 6%. If an investor desires to earn an expected rate of return of 15%, in what combination should he hold the market portfolio and the risk free security? (Assume risk free of interest is 8%)

Question No: 17 Elementary on Portfolio /CAPM

P Ltd. has an expected return of 22% and Standard deviation of 40%. Q Ltd. has an expected return of 24% and standard deviation of 38%. P has a beta of 0.86 and Q 1.24. The correlation between the returns of P and Q is 0.72. The standard Deviation of the market return is 20%. (a) Is investing in Q better than investing in p? (b) If you invest 30% in Q and 70% in P, what is your expected rate of return and the portfolio standard deviation? (c) What is the market portfolio's expected rate of return and how much is the risk-free rate? (d) What is the beta of portfolio if P's weight is 70% and Q is 30%?

Question No: 18 Reverse Working

Europium Ltd. has been specially formed to undertake two investment opportunities. The risk and return characteristics of the two projects are shown below:

	A	B
Expected return	12%	20%
Risk	3%	7%

Europium plans to invest 80% of its available funds in Project A and 20% in B. The directors believe that the correlation co-efficient between the returns of the projects is +0.1.

Required:

- Calculate the returns from the proposed portfolio of Projects A and B;
- Calculate the risk of the portfolio;
- Comment on your calculations in part (b) in the context of the risk reducing effects of diversification:

Suppose the correlation co-efficient between A and B was -1 . How should Europium Ltd. invest its funds in order to obtain a zero risk portfolio.

Question No: 19 Decision Model

Bettaluck Ltd. has been enjoying a substantial net cash inflow, and until the surplus funds are needed to meet tax and dividend payments, and to finance further capital expenditure in several months time, they have been invested in a small portfolio of short-term equity investments.

Details of the portfolio, which consists of shares in four UK listed companies, are as follows.

Company	Number of shares held	Beta equity co-efficient	Market price per share	Latest Dividend Yield %	Expected return on equity in the next year %
Dashing Ltd.	60000	1.16	\$4.29	6.10	19.50
Elegant Ltd.	80000	2.28	\$2.92	3.40	24.00
Fantastic Ltd.	100000	0.90	\$2.17	5.70	17.50
Gaudy Ltd.	125000	1.50	\$3.14	3.30	23.00

The current market return is 19% a year and the Treasury bill yield is 11% a year.

Required:

- On the basis of the data given, calculate the risk of Bettaluck Ltd.'s short term investment portfolio relative to that of the market.
- Recommend, with reasons, whether Bettaluck Ltd. should change the composition of its portfolio.

Question No: 20 Elementary

(a) A Security has a standard deviation of 2.8%. The correlation co-efficient of the security with a market is 0.8 and market standard deviation is 2.3%. The return from government securities of 12% and from the market portfolio is 18%. What is the required return on the portfolio.

(b) In a portfolio of the company Rs.2,00,000 have been invested in asset X which has an expected return of 8.5%, Rs.2,80,000 in asset Y, which has an expected return of 10.2% and Rs.3,20,000 in asset Z which has an expected return of 12%. What is expected return for the portfolio and expected return on investment of portfolio.

Question No: 21 Sensitivity Analysis

In the context of CAPM, what is the expected return of security j if it has the following characteristics and if the following information holds for the market portfolio?

Standard Deviation, Security j	0.20
Standard Deviation, market portfolio	0.15
Correlation between possible returns for security j and the market portfolio	0.80
Risk-free rate	0.07

- What would happen to the required return if the standard deviation of security j were higher?
- What would happen if the correlation co-efficient were less?

- c) What is the functional relationship between the required return for a security and market risk?

Question No: 22 Comprehensive

XYZ is at present engaged in production of sport shoes and has a debt equity ratio of 0.80. Its present cost of debt funds is 14% and it has a marginal tax rate of 60 per cent. The company is proposing to diversify to a new field of adhesives which is considerably different from the present line of operations. XYZ Ltd. is not well conversant with the new field. The company is not aware of risks involved in area of adhesives but there exists another company PQR, which is a representative company in adhesives. PQR is also a public limited company whose shares are traded in the market. PQR has a debt to equity ratio of .25, a beta of 1.15 and an effective tax rate of 40 percent.

- (a) Calculate what systematic risk is involved for XYZ Ltd. if the company enters into the business of adhesives. You may assume CAPM holds and XYZ employs same amount of leverage.
- (b) In case risk free rate at present is 10 per cent and expected return on market portfolio is 15% what return XYZ Ltd. should require for the new business if it uses a CAPM approach.

Question No: 23 Buy back

XYZ Ltd. pays no taxes and is entirely financed by equity shares has a β of 0.6, a PE ratio of 5 and is priced to offer an expected return of 20%. XYZ Ltd now decides to buy back, half of the equity shares by borrowing an equal amount. If the debt yields a risk free return of 10%, calculate

- (i) The β of the equity shares, after the buy back.
- (ii) Required return and the risk premium on the equity shares before the buyback.
- (iii) The required return and risk premium of the equity shares after buyback.
- (iv) The required return on debt.
- (v) The % increase in expected earnings per share.
- (vi) The new price earning multiple.

Assume that operating profit of the firm is expected to remain constant in perpetuity. (To know more about us visit KalpeshClasses.com)

Question No: 24 Risk Analysis

XYZ Ltd. is a consumer goods company which earns expected return of 12% on its existing operations subject to standard deviation of 20%. The company is owned by a family and the family has no other investment.

New project is under consideration and the new project is expected to give a return of 16% subject to standard deviation of 32%. The new project has a correlation of 0.25 with XYZ's existing operations.

The new project is likely to account for 25% of XYZ's operation.

XYZ has identified a utility function to appraise risky project. The function is as under:-

Shareholder's utility = $100 R - \sigma^2$

Where

R = Expected return (in %)

$\hat{\sigma}_2$ = Standard deviation of return (in %)

The project can be accepted only if total utility goes up. Evaluate the project.

Question No: 25 CAPM

Two companies are identical in all respects except capital structure. One company AB Ltd. has a debt equity ratio of 1 : 4 and its equity has a β (beta) value of 1.1. The other company XY Ltd. has a debt equity ratio of 3 : 4. Income Tax is 30%. Estimate β (beta) value of XY Ltd. given the above.

Question No: 26 Permutations of finance and risk analysis

M/s. V Steels Ltd. is planning for a diversification project in Automobile Sector. Its current equity beta is 1.2, whereas the automobile sector has 1.6. Gearing of automobile sector is 30% debts, 70% equity. If expected market return is 25%, risk free debt is 10% and taxation rate is taken as 30% and also that corporate debt is assumed to be risk free, compute suitable discount rate under the following situations.

- (i) Project financed by equity only.
- (ii) By 30% debt and 70% equity.
- (iii) By 40% debt and 60% equity.

Question No: 27 Asset beta

If an industry's equity beta is 1.45 and its debt beta is 0.25 with an average gearing rate of 2:5, what is its assets beta, given a 35% corporate tax rate?

Question No: 28 Project beta

A project had an equity beta of 1.2 and was going to be financed by a combination of 30% debt and 70% equity.

Assuming debt-beta to be zero, calculate the Project beta taking risk-free-rate of return to be 10% and return on market portfolio at 18%.

Question No: 29 Revised beta

Company D has a beta value of 1.2. It is thinking of undertaking a project with a beta value of 1.7. If, when accepted, the project will comprise 10% of the firm's total worth, what will be the subsequent beta value of the company?

Question No: 30 Comprehensive

Beauty care Ltd which is financed by 10,000,000 ordinary shares and Rs.5,000,000 of irredeemable 8% debentures. The market value of the shares is Rs2 each ex div, and an annual dividend of 40 paise per share is expected to be paid in perpetuity. The debentures are considered to be risk-free and are valued at par.

The company is wondering whether to invest in a project which cost Rs.2,000,000 and yield Rs.380,000 a year before tax in perpetuity. The project has an estimated beta value of 1.25.

The return from a well-diversified market portfolio is 16%.

Required

- (a) Calculate the weighted average cost of capital of the company.
 - (b) Calculate the beta of the company.
 - (c) Calculate the beta of an equivalent ungeared company.
 - (d) Advise the company whether or not the project should be accepted.
- Ignore taxation.

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DERIVATIVES

Terms and their meanings/importance.

Call Option: A call option gives the buyer 'the right but not the obligation' to buy the share at a specified price on a future date.

Put Option: A put option gives the buyer 'the right but not the obligation' to sell a share at a given price on a future date.

Exercise: Options that can be exercised earlier to the expiration date are American Options and European options can be exercised only on the date of expiration.

Call/Put premium: The price paid by the buyer of a call/put option is termed as the call/put premium. The premium is a one time outflow for the buyer of the options.

Expiration Date: It is the day on which the option contract matures. The expiration date in the case of options on both NSE and BSE is fixed as the last Thursday of the respective month.

Strike Price: It is the price at which an option can be exercised.
e.g.: "Nifty 26th July 1020 strike call option" means the investor can exercise the call option at the Nifty exchange on 26th July at a price of Rs 1020.

In the money: A call option is "in the money" if the strike price is less than the market price of the underlying share. A put option is "in the money" when the strike price is greater than the market price.

Out of the money: A call option is "out of the money" if the strike price is greater than the market price of the underlying share. A put option is "in the money" when the strike price is less than the market price.

Fill in the Blanks:

- b) A _____ option gives the purchaser the opportunity to buy a share / shares at a specified price which is generally called as _____ price or _____ price.
- c) A _____ option gives the purchaser the opportunity to sell a share / shares at a specified price.
- d) The buyer of the option is referred to as _____ of option. The seller of the option is referred to as _____ of the option.
- e) Holder has _____ obligation & writer has _____ obligation.
- f) A holder of call / put option should pay as consideration _____.

- g) Options can be exercised only at maturity are _____ options & other option are _____.
- h) Call option shall lapse when the future spot is _____ than exercise price. Similarly put option shall be rendered valueless if future spot is _____ than strike price.
- h) In case of call option when
- (a) Future Spot < Strike Price, it would be referred to as _____ the money.
 - (b) Future Spot = Strike Price, it would be referred to as _____ the money.
 - (c) Future Spot > Strike Price, it would be referred to as _____ the money.
- i) In case of put option, when
- (a) Future Spot < Strike Price, it would be referred to as _____ the money.
 - (b) Future Spot = Strike Price, it would be referred to as _____ the money.
 - (c) Future Spot > Strike Price, it would be referred to as _____ the money.
- j) Action of mitigating the loss through derivatives is referred to as _____ and action of profiting through derivatives is referred to _____.
- k) An executive who qualifies for a share option plan acquires _____ option.
- l) A firm buys an advanced technology system with a ready second hand market. The second hand market gives the firm a _____ option.
- m) Rights shares are _____ options.
- n) A holder of call option is _____ish so also writer of put option. Their pay off would be positive only in such market similarly writer of a call option is _____ish so also the holder of put option. Their pay off would be position only in such market.
- o) An option premium or value of option has two parts. They are _____ value and _____ value.
- p) Writer has to pay initial _____ & maintain in accordance with the requirement of the clearing house.
- q) When seller of a call does not have the underlying asset on deposit, then it is referred to as _____ call or _____ call. Otherwise it is referred to as _____ call.
- r) What is the effect on the value of call options (indicate gains by +ve sign and losses by – sign)

	increase	Decrease
Share Price – future	_____	_____

Strike Price.	_____	_____
Interest rate.	_____	_____
Time to maturity	_____	_____
Volatility	_____	_____

Question No: 1 Basics

From the following find whether the holder of call option would exercise his right on the expiry date?

S.No.	Strike Price	Actual Future Price	Action
1	190	210	
2	200	190	
3	370	400	
4	400	450	
5	460	460	
6	900	800	
7	540	450	
8	280	300	
9	175	200	
10	030	025	

Question No: 2 Fundamentals

From the following find whether the holder of put option would exercise his right on the expiry date?

S.No.	Strike Price	Actual Future Price	Action
1	270	240	
2	360	300	
3	450	400	
4	190	201	
5	200	205	
6	220	220	
7	165	165	
8	520	500	
9	090	075	
10	750	800	

Question No: 3 Choice

What option would you choose on the following Strike Price and Expected Future Spot? Will you exercise the option if the Actual Future Spot are as follows?

S.No.	Strike Price	Expectation of Future price	Choose the Option	Actual Future Spot	Action To be Taken
1	100	120		120	
2	180	160		160	
3	100	120		130	
4	135	120		137	
5	140	175		135	
6	152	145		148	
7	160	185		155	
8	115	110		105	

9	160	180		170	
10	175	160		180	

Question No: 4 Diagrammatic Presentation

Ram has purchased a 3- month call option on a company's share with an exercise price Rs 51. The current price of the share is Rs 50. Determine the value of call option at expiration if the share price turns out to be either Rs 47 or Rs 54. Draw a diagram to illustrate your answer.

Question No: 5 Diagrammatic Presentation

You have bought one 6- month call option on a share with an exercise price of Rs 98 at a premium of Rs 3. The share has a current price of Rs 100. You expect share to either rise to Rs 108 or fall to Rs 95 after six months. What will be your pay-off when option matures? Draw a diagram to explain.

Question No: 6 Diagrammatic Presentation

Consider the following information:

Future Spot Price Rs.50 – Rs.90 with an interval of Rs.5

Strike Price Rs.70; Premium Rs.5 paid on call option

(a)Find out the payoff for the holder of call option

(b)Also draw chart on the position of the holder

(c) Find out the payoff for the writer of call option

(d) Also draw chart on the position of the writer

Question No: 7 Diagrammatic Presentation

Consider the following information:

Future Spot Price Rs.50 – Rs.25 with an interval of Rs.5

Strike Price Rs.30; Premium Rs.2 received on call option

(a)Find out the payoff for the holder of put option

(c) Find out the payoff for the writer of put option

(b) Also draw chart on the position of the writer and the holder

BRIEF TIME TABLE FOR NOVEMBER 2005 C.A. FINAL EXAMINATION.**SUBJECT : DIRECT TAX**

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Question No: 8 Diagrammatic Presentation

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Mr.A bought a call option with strike price at Rs.80 at a cost of Rs.5. The Expiry period is 3 months. On the same day, he also bought a Put Option for the same underlying asset for the same period, at a strike price of Rs.80 at a cost of Rs.4. Draw a graph showing both the call option & Put option from the following prices of future spot: Rs.65 – Rs.95 with an interval of Rs.5

Comment on the strategy

Question No: 9 Diagrammatic Presentation

Srinivasamurthy has sold a 6- month put option on a company's share with an exercise price of Rs 100. The current share price is Rs 100. Calculate the value of put option to writer at maturity if the share price increases to Rs 110 or decreases to Rs 90. Draw a diagram to illustrate your answer.

Question No: 10 Diagrammatic Presentation

Mr. A wrote a call of strike price of Rs.80 for a premium of Rs.5. The expiration period is 3 months. He had also written on the same day a put for the same stock at a strike price of Rs.80 for a premium of Rs.4. Draw the graph for the writer for the future spot prices of Rs.65 -95 with an interval of Rs.5. Comment on the strategy

Question No: 11 Diagrammatic Presentation

You have bought one 6- month put option on a share with an exercise price of Rs 96 at a premium of Rs 4. The share has a current price of Rs 100. You expect share to either rise to Rs 108 or fall to Rs 95 after six months. What will be your pay-off when option matures? Draw a diagram to explain.

Question No: 12 Diagrammatic Presentation

Shyama sells a 6- month put with an exercise price of Rs 70 at a premium of Rs 5. Under what situation option will be exercised? When will Shyama make profit? Draw a diagram to illustrate Shyama's profit or loss position with the share prices at maturity.

Question No: 13 Diagrammatic Presentation

Consider a Call and a Put on the same underlying stock with a same expiration period of 90 days.

Strike Price of a call	Rs.100
Strike Price of a Put	Rs.90
Premium of call	Rs.20
Premium of Put	Rs.12

Draw a Chart from the view point of a holder from the given prices on future spot of Rs.50 – Rs.150 with an interval of Rs.5.

Comment on the strategy

Question No: 14 Diagrammatic Presentation

Consider a situation of writing a call as well as a put for the same underlying stock.

Strike Price of a call	Rs.100
Strike Price of a Put	Rs.90
Premium of call	Rs.20
Premium of Put	Rs.12

Draw a Chart from the view point of a writer from the given prices on future spot of Rs.50 – Rs.150 with an interval of Rs.10.

Comment on the strategy

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Question No: 15 Diagrammatic Presentation

(a) You buy a call option on a share with an exercise price of Rs 100. You also buy a put option on the same share with an exercise price of Rs 97. What profit or loss will you have on maturity from your portfolio of call and put? Explain with the help of a diagram.

(b) Assume that you paid a call premium of Rs 3 and a put premium of Rs

Question No: 16 Strategy

Mr. Bull bought a call with a Strike price of Rs.100 at a cost of Rs.9 and also wrote a call with a strike price of Rs.110 for a premium of Rs.5. Draw his position for the future stock prices of Rs.80 to 140 with an interval of Rs.5. Comment on the strategy.

Question No: 17 Strategy

Mr. Bear writes a call with a strike price of Rs.100 for a premium of Rs.9 and also buys a call on the same underlying stock with a strike price of Rs.110 for a premium of Rs.5. Draw a graph for future spot prices of Rs.80 – Rs.140 with an interval of Rs.5. Comment on the strategy.

Question No: 18 Strategy

Ms. Butterfly, an investor buys a call with a strike price of Rs.40 and another call at a Strike price of Rs.30. She also writes two calls at a Strike price of Rs.35. Ignore premium paid and collected. Draw the graph for the future spot prices of Rs.20 – Rs.50 with an interval of Rs.5. (To know more about us visit KalpeshClasses.com) Comment on the strategy.

Question No: 19 Pay off

Jennifer Capriati is considering writing a 30-day option on Video Sonics Corporation Ltd, which is currently trading at Rs.60 per share. The exercise price will also be Rs.60 per share, and the premium received on the option will be Rs.3.75. at what common share prices will she make money, at what price will she begin to lose money, and at what prices will she lose Rs.5 and Rs.10 on each option that is written?

Question No: 20 Pay off

Sridharan has purchased a put option on a share at a premium of Rs 5. The current share price is Rs 44 and the exercise price is Rs 42. At maturity the share price may either increase to Rs 45 or fall to Rs 43. Will he exercise his option? Why?

Question No: 21 Pay off

Narendra Modi holds 50 share of Xerox Company. He is intending to write calls on Xerox's shares. If he writes a call contract for 50 shares with an exercise price of Rs 100 each share, determine the value of his portfolio when the option expires if (a) the current share price of Rs 45 rises to Rs 65, or (b) the share price falls to Rs 40.

Question No: 22 Pay off

Chandran has purchased 3-month put on the same share with an exercise price of Rs 50 at a premium of Rs 4. He has also bought a 3-month put on the same share with an exercise price of Rs 50 at a premium of Rs 2. Determine Chandran's position at maturity if the share price is either Rs 52 or Rs 45.

Question No: 23 In/At/Out of the Money-Put call parity

Recent quotations for options on IBM shares are given below. IBM shares were selling at Rs.129.25 and the call money rate (charged to brokers on share exchange collateral) was 6.25 percent.

Strike Price	Call Price	Put Price
Rs.125	Rs.10.75	Rs.5.75
130	8.15	8.25

- a) Which options are in-the money and which is out-of the-money?
b) Assume that there is exactly 50 days to expiry. What value would put call parity imply for European puts? What reasons might account for the traded ones being worth slightly more?

Question No: 24 Value of option

The share of Emperor Ashok Ltd is currently selling for Rs 100. It is known that the share price will either turn to be Rs 108 or Rs 90. The risk-free rate of return is 12 per cent per annum. If you intend to buy a 3 month call option with an exercise price of Rs 97, how much should you pay for buying the option today? Assume no arbitrage opportunity.

Question No: 25 Risk neutralization

A share has a current share price of Rs 100. The share price after six months will be either Rs 115 or Rs 90. The risk-free rate is 10 per cent per annum. Determine the value of a 6-month call option on the share with an exercise price of Rs 100 using the risk-neutral argument.

Question No: 26 Value of option

Superb Ltd's share is current selling for Rs 60. It is expected that after two months the share price may either increase by 15 per cent or fall by 10 per cent. The risk-free rate is 9 per cent per annum. What should be the value of a two-month European call option with an exercise price of Rs 65? What is the value of a two-month European put option with an exercise price of Rs 65?

Question No: 27 Non dividend – value of option

Determine the price of a European call option on a share that does not pay dividend. The current share price is Rs 60, the exercise price Rs 55, the risk-free rate is 10 per cent per annum, the share return volatility is 40 per cent per annum and the time to expiration is six months.

Question No: 28 Non dividend – value of option

Calculate the value of a European put option on a share that does not pay dividend. The current share price is Rs 86, the exercise price Rs 93, the risk-free rate is 12 per cent per annum, the share return volatility is 60 per cent per annum and the time to expiration is four months.

Question No: 29 Valuation under Binomial Model

A Share price is currently Rs.40. it is known that that at end of one month it will be either Rs.38. the risk-free interest rate is 8% per annum with continuous compounding. What is the value of a one-month European call option with a strike price of Rs.39?

Question No: 30 Valuation under Binomial Model

A Share price is currently Rs.50. it is known that at the end of six months it will either Rs.45 or Rs.55. the risk-free interest rate is 10% per annum with continuous compounding. What is the value of a six-month European put option with a strike price of Rs.50?

Question No: 31 Valuation under Binomial Model

A Share price is currently Rs.80. it is known that at the end of four months it will be either Rs.75 or Rs.85. The risk-free interest rate is 5% per annum with continuous compounding. What is the value of a four-month European put option with a strike price of Rs.80? use no arbitrage arguments.

Question No:32 Valuation under Binomial Model

The current share price is Rs.100 and share price volatility has been estimated to be 20%. P.a. The risk free interest rate is 6% p.a. Using a one period binomial, estimate the fair price of a one-month call option with a strike price of Rs.100 and Rs.105

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Question No:33 Valuation under Binomial Model- Two period

The current share price is Rs.100 and share price volatility has been estimated to be 20%. P.a. The risk free interest rate is 6% p.a. Using a two period binomial, estimate the fair price of a two month call option with a strike price of Rs.100.

Question No: 34 Value of option

Prudential ICICI's share price is now Rs.60. Six months hence, it will be either Rs.75 probability 0.70 or Rs.50 with probability 0.30. A call option exists on the share that can be exercised only at the end of 6 months at an exercise price of Rs.65. What is the expected value of option price at the end of the period?

Question No: 35 Put call Parity

The common share of Triangular File Company is selling at Rs.90. A 26-week call option written on Triangular File's share is selling for Rs.8. The call's exercise price is Rs.100. The risk-free interest rate is 10 percent per year.

- Suppose that puts on Triangular share are not traded, but you want to buy one. How would you do it?
- Suppose that puts are traded. What should a 26-week put with an exercise price of Rs.100 sell for?

Question No: 36 Put call Parity

A put and a call option each have an expiration date 6 months hence and an exercise price of Rs.10. The interest rate for the 6-month period is 3 percent.

- (a) If the put has a market price of Rs.2 and share is worth Rs.9 per share, what is the value of the call?
- (b) If the put has a market price of Rs.1 and the call Rs.4, what is the value of the share per share?
- (c) If the call has a market value of Rs.5 and market price of the share is Rs.12 per share, what is the value of the put?

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NOV 2005 (A.Y. 2005-2006)	GHATKOPAR	17-07-2005	In Progress

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Question No: 37 Black Scholes model

Find out the values of call as well as put for the following on the assumption that the options are European with no dividend during the period of holding.

S.No	S_0	E	R	T	σ
1	50	49	7	200 days	0.3
2	60	56	14	6 months	0.3
3	120	110	14	1 year	0.4
4	20	20	12	3 months	0.4
5	40	45	10	6 months	0.3
6	25	30	8	6 months	0.2
7	412	400	5	3 months	0.22
8	380	400	5	3 months	0.22
9	408	400	5	3 months	0.22

Question No: 38 Value of option – Dividend paying stock

Consider a call option with a strike price of Rs. 45 and four months to expiration. The share is trading at Rs. 50. Using past share prices, the variance in the log of share prices is estimated at 0.06. There is one dividend, amounting to Re 0.56, and it expected to be paid in two months. The risk-free rate is 3%. Find out the value of the call option

Question No: 39 Value of option – Dividend paying stock

A four-month European call option on a dividend-paying stock is currently selling for Rs.5. The stock price is Rs. 64, the strike price is Rs. 60, and a dividend of Rs. 0.80. is expected in one month. The risk-free interest rate is 12% per annum for all maturities. What opportunities are there for an arbitrageur?

Question No: 40 Value of option – Dividend paying stock

The price of a European call that expires in six months and has a strike price of Rs. 30 is Rs.2. The underlying stock price is Rs.29, and a dividend of Rs.0.50 is expected in two months and in five months. The term structure is flat, with all risk-free interest rates being 10%. What is the price of a European put option that expires in six months and has a strike price of Rs.30?

Question No: 41 Arbitrage

Given the following:

Strike Price	= Rs.180
Current Price of one share	= Rs.200
Risk free rate of interest	= 10% p.a.

- Calculate theoretical minimum price of a European call option expiring after one year.
- If price of the call option is Rs.30, then how can an arbitrageur make profit.

Question No: 42 Put option valuation

Given the following data:

Strike price	= Rs.400
Current stock price	= Rs.370
Time until expiration	= 6 months
Risk free rate of interest	= 5% p.a.

(i) Calculate the theoretical minimum price of a European put option.

If European put option price of Rs.10, then how can an arbitrageur make profit.

Question No: 43 Currency Options

The exchange rate for sterling is currently \$1.5 = £1. Suppose you need to buy pounds at the year. You want to be sure that, regardless of the future market price, you will not pay more than Rs.1.6 = £1. In return you are prepared to guarantee a minimum price of \$1.4 = £1. What option positions would provide you with this ceiling and floor?

Question No: 44 Valuation of futures

A non-dividend paying stock has a current price of Rs.16. What will be the futures price if the risk free rate is 9% and the maturity of the futures contract is 1 month?

Question No: 45 Valuation of index futures

Suppose a stock index has a current value of 3500. If the risk free interest is 8% and the expected yield is 2%, what should be the price of a six months maturity futures contract?

Question No: 46 stock futures

From the following details, please find out if there does any arbitrage opportunity exist?

Spot price of Reliance stock	= Rs.210
4 months Reliance futures	=Rs.216
Rate of Interest	= 12%
Dividend payable by company	= @40%

Question No: 47 security futures

What should be the futures price of T-bill futures contract from the theoretical futures price form the details mentioned below–

Spot price of 3months T-bill	=Rs.97.80
Time to expiration of T-bill futures contract	= 60 days
Risk free rate of interest	=9% p.a.

Question No: 48 stock Index futures

A portfolio manager owns 3 stocks:

Stock	Shares owned	Stock Price	beta
1	1 lakh	400	1.1
2	2 lakhs	300	1.2
3	3 lakhs	100	1.3

The spot Nifty Index is at 1350 and futures price is 1352. to use stock index futures to (a) decrease the portfolio beta to .8 and (b) increase the portfolio beta to 1.5

Question No: 49 Hedging through stock index futures

An equity fund manager owns a portfolio of Rs.10 crores in stocks with a portfolio beta of 1.15. he is concerned that the stock market will decline in the next few days, but does not wish to bear the brokerage costs and price pressure of selling stocks and then purchasing them after the anticipated decline. $S = 1350$ and $F = 1360$. he decides to use futures to hedge against the expected market decline. What is the risk minimizing hedge for the stock position?

Question No: 50 Hedging through stock index futures

Ravi bought 5000 shares of Reliance @ 200 per share on 29th September, 1999, he wants to hold this investment till 31st December, 1999.

The beta of Reliance is say – 1.2. he wants to hedge his market exposure by selling Nifty. Futures contract which is available at 1,200 at the moment. Let us find out how he can hedge his position and to work out profit/loss or Ravi in these situations:

- (a) On 31/12/99, suppose Nifty rises to 1250 and Reliance stock to Rs.230.
- (b) Suppose Nifty goes down to 1150 and Reliance shares also goes down to Rs.185.

Question No: 51 Hedging through stock index futures

EverPlus Pvt. Ltd. has a very strong view that Tata Steel share will go down since steel industry scenario is perceived to be gloomy. It believes that within one months prices of Tata Steel will go down by 20% from present Rs.150. it solds 10,000 shares of Tata Steel short and wants to holds short position for a month. Today is 30th September, 99 and it wants to square up its position by 31st October, 1999. to hedge stock index exposure, it want to use Nifty futures Contracts. Nifty is say at 1200 now. Calculate the number of Nifty futures contracts to be purchased by the company and what is its profit profile on 31st October, 99 in the following situation:

- (a) America lifted sanctions which boosted the market sentiments and Nifty rose to 1275 and Tata Steel also increased to Rs.154.
 - (b) Nifty reduced to 1150 points and Tata Steel was Rs.135.
- Beta of Tata Steel is say 0.8.

Question No: 52 Hedging through stock index futures

Suppose you have a portfolio of 10 crores shares. The beta of the portfolio is 1.19. the portfolio is to be hedged by using Nifty futures contracts. To find out number of contracts in futures market to neutralize risk (a) completely (b) reducing beta to 0.5 (c) taking beta to 1.00.

Question No: 53 Hedging through stock index futures

Mahesh takes long position in BSE sensex December, 99 (each point is equal to Rs.50) at 4,700 on 30/10/03. he buys 5 contracts on 10/11/03. index rises to 4750 and he closes his position by selling index contracts.

Margin to be maintained @10% of the value. Find out the money value of redemption?

Question No: 54 valuation of stock futures

The share of Reliance Ltd which is not expected to pay dividend in the near future is currently selling for Rs.150. The risk free interest rate is 0.8% per month. A 3-month futures contract is selling for Rs.152. Develop an arbitrage strategy and show what your profit will be 3 months hence.

MERGERS, ACQUISITIONS & TAKEOVER

Question No: 1 Valuation of firms

	X Ltd.	Y Ltd.	Merged Company
Value of the Company	Rs.40Lacs	Rs.10Lacs	60 Lacs

Compensation paid to Y Ltd. for takeover is Rs.12L
Find out the value of the two firms.

Question No: 2 Preliminaries

Very Big Ltd is determined to report earnings per share of Rs. 2.67. It therefore acquires the Small and Little Company. You are given the following facts:

	Very Big Ltd	Small and Little	Merged Firm
Earnings Per Share	2	2.50	2.67
Price Per Share	40	25	?
Price-earnings ratio	20	10	?
Number of Shares	100,000	200,000	?
Total earnings	200,000	500,000	?
Total Market value	4,000,000	5,000,000	?

Once again there are no gains from merging. In exchange for Small and Little shares, Very Big Ltd issues just enough of its own shares to ensure its Rs.2.67 earnings per share objective.

- Complete the above table for the merged firm.
- How many shares of Very Big Ltd are exchanged for each share of Small and Little?
- What is the cost of the merger to Very Big Ltd?
- What is the change in the total market value of the Very Big Ltd shares that were outstanding before the merger?

Question No: 3 Exchange Ratio with guaranteed EPS

Mr. Optimistic, the Chairman of BSNL wants a target EPS of Rs.8 after acquiring VSNL. The following information is provided to find:

	BSNL Rs.	VSNL Rs.
EPS	6	6
Market Price Per Share	50	48
No. of Equity Shares	90,000	75,000

It is measured that the effect of synergy would be 11.12% during post acquisition period. What exchange ratio would guarantee an EPS of Rs.7.5 for BSNL?

Question No: 4 Exchange ratio - acquiring company

If the cost of merger is computed of Rs.277.5 lacs after acquiring small Ltd., what is the exchange ratio worked out by the acquiring company Big Ltd. from the following information?

MPS of Big Ltd (Before Acquisition)	Rs.192.50
MPS of Small Ltd. (Before Acquisition)	Rs.88
No. of shares of Big Ltd. (Before Acquisition)	20 Lacs
No. of shares of Small Ltd. (Before acquisition)	15 Lacs

It is also estimates that the synergy value is measured at present value of RS 687.5 lacs.

Question No: 5 Exchange Ratio, EPS & MPS

A Ltd in considering annexing B Ltd. The financial information is as follows:

	A Ltd.	B Ltd.
PAT (Rs. In L)	40	10
EPS Rs.	2	1.25
No. of Equity Shares	20 Lacs	8 Lacs
PE Ratio	12	8

A Ltd. in willing to pay 20% Premium based MPs.

Find out

- The ratio of exchange.
- Number of new shares of A Ltd. to be issued.
- EPS of the merged entity with no Synergy benefit.
- MPS if EPS is 12 times after merger.
- MPS if EPS is 11 times after merger.

Question No: 6 Exchange Ratio – Maximum and Minimum

Telco Plans to acquire Tisco. The following information is provided as following:

	Telco	Tisco
MPS	Rs.300	Rs.200
EPS	Rs.25	20
No. of ES	20 L	10 L
PER	12	10

- What is the maximum exchange ratio to the shareholders of Telco if the PE Ratio after on acquisition is 11 with no synergy gain?
- What is the minimum exchange ratio to the shareholders of Tisco if PE Ratio after acquisition is 11.5 and the benefit by synergy is 5%

Question No: 7 Exchange Ratio – Maximum & Minimum

Parthiv Limited and Rathra Limited are discussing a merger deal in which Parthiv will acquire Rathra. The relevant information about the firms is given as follows:

	Parthiv	Rathra
Total earnings, E	Rs.36 million	Rs.12 million
Number of outstanding shares, S	12 million	8 million
Earnings per share, EPS	Rs.3	Rs.1.5
Price-earnings ratio, P/E	10	6
Market price per share, P	Rs.30	Rs.9

- What is the maximum exchange ratio acceptable to the shareholders of Parthiv Limited is the PE ratio of the combined firm is 8?

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- (b) What is the minimum exchange ratio acceptable to the shareholders of Rathra Limited if the PE ratio of the combined firm is 9?

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Question No: 8 Merger financed by cash / shares

X Ltd is considering the proposal to acquire Y Ltd. and their financial information is given below:

	X Ltd	Y Ltd
No. of Equity shares	10,00,000	6,00,000
Market Price per Share Rs.	30	18
Market Capitalisation Rs.	3,00,00,000	1,08,00,000

X Ltd. intend to pay Rs.1,40,00,000 in cash for Y Ltd. if Y Ltd's market price reflects only its value as a separate entity.

Calculate the cost of merger:

- When Merger is financed by cash
- When Merger is financed by 500000 Shares.

Question No: 9 NPV if merger is financed by cash / shares

Skycell Ltd is being negotiated by Airtel Ltd for a possible acquisition:

Particulars	Airtel	Skycell
Market Value Rs in Lacs	30	8
Market Price per share Rs.	40	No quote available

Airtel Ltd estimates that the incremental value is Rs.250000/- and the total purchase value is at Rs.10 Lacs.

- If cash is paid, what is the NPV in the proposed acquisition?
- What is the NPV if shares were offered?

Question No: 10 Comprehensive

Anjaneya Couriers is analyzing the possible acquisition of Nalen Restaurants. Neither firm has debt. The forecasts of Anjaneya show that the purchase would increase its annual after-tax cash flow by Rs.600,000 indefinitely. The current market value of Nalen is Rs.20million. The current market value of Anjaneya is Rs.35 million. The appropriate discount rate for the incremental cash flow is 8%.

- What is the synergy from the merger?
- What is the value of Nalen to Anjaneya?

Anjaneya is trying to decide whether it should offer 25% of its share Rs.15 Million in cash to Nalen.

- c) What is the cost to Anjaneya of each alternative?
- d) What is the NPV to Anjaneya of each alternative?
- e) Which alternative should Anjaneya use?

Question No: 11 Capital Budgeting – Dividend Growth model

Chennai Limited and Kolkata Limited have agreed that Chennai Limited will take over the business of Kolkata Limited with effect from 31st December, 2001. It is agreed that:

- (i) 10,00,000 shareholders of Kolkata Limited will receive shares of Chennai Limited. The swap ratio is determined on the basis of 26 weeks average market prices of shares of both the companies. Average prices have been worked out at Rs.50 and Rs.25 for the shares of Chennai Limited and Kolkata Limited respectively.
- (ii) In addition to (i) above shareholders of Kolkata Limited will be paid cash based on the projected synergy that will arise on the absorption of the business of Kolkata Limited by Chennai Limited. 50% of the projected benefits will be paid to the shareholders of Kolkata Limited.

The following projection has been agreed upon by the management of both the companies.

Year	2002	2003	2004	2005	2006
Benefit (in Rs. Lacs)	50	75	90	100	105

The benefit is estimated to grow at the rate of 2% from 2007 onwards. It has been further agreed that a discount rate of 20% should be used to calculate the cash that the holder of each share of Kolkata Limited will receive.

- (i) Calculate the cash that holder of each share of Kolkata Limited will receive.
- (ii) Calculate the total purchase consideration.

Question No: 12 Advanced – Synergy – Dividend Growth model

As Financial Controller of Lovely Products Ltd you are investigating the possible acquisition of Plastitoys Ltd. You have the following basic data:

	Lovely products	Plastitoys
Earnings per share	5	1.50
Dividend per share	3	0.80
Number of shares	1,000,000	600,000
Share price	90	20

You estimate that investors currently expect a steady growth of about 6% in plastitoys earnings and dividends. Under new management this growth rate would be increased to 8% per year, without any additional capital investment required.

- (a) What is the gain from the acquisition?
- (b) What is the cost of the acquisition if Lovely Products pays 25 in cash for each share of Plastitoys?

What is the cost of the acquisition if Lovely Products offers one share of Lovely Products for every three shares of Plastitoys?

How would the cost of the cash offer and the share offer alter if the expected growth rate of Plastitoys were not changed by the merger?

Question No: 13 Going Private

Big Limited a chain of restaurants is considering going private limited. The president Rajan Baba believes that with the elimination of Shareholder servicing costs and other costs associated with public ownership, the company could save Rs. 800,000 per annum before taxes. In addition, the company believes management incentives and hence performance will be higher as a private company. As a result, annual profits are expected to be 10% greater than present after-tax profits of Rs 9 million. The effective tax rate is 30%, the price

/ earnings ratio of the Share is 12, and there are 10 million shares outstanding. What is the present market price per share? What is the maximum Rupees premium above this price that the company could pay in order to take the company into private Limited?

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IN ASSOCIATION WITH KALPESH CLASSES**Question No: 14 Capital Budgeting**

KL Ltd. wants to acquire LM Ltd. The cash flows of KL Ltd. & the merged entity is given as follows:

Year	1	2	3	4	5
KL Ltd. (Rs. in Lacs)	275	302.5	324.5	341	357.5
Merged Entity	440	495	563.75	591.25	618.75

Earnings would have witnessed 5% constant growth rate without merger and 6% with merger on account of economies of operations after 5 years in each case. The cost of capital is 15%. Since the details of the vendor company is not coming forth but a principle commitment was made by the chairman of KL Ltd as exchange ratio at 0.6. This is likely to be accepted by both the parties. From the view point of KL Ltd, find out the value of acquisition.

Question No: 15 Capital Budgeting - advanced

Tough Products has estimated the following anticipated incremental benefits and investments for a potential target:

Year	$\Delta CFBT$ (in Rs.)	ΔDep^* (in Rs.)	$\Delta Investment$ (in Rs.)
1	80000	20000	150000
2	80000	50000	100000
3	135000	50000	50000
4	190000	50000	0
5	195000	50000	0
6 – 10	200000	20000	0

* Δ depreciation is for the Δ investment in the column immediately to the right.

- If Tough's tax rate is 0.40, Calculate the incremental after – tax cash flows, ΔC_f , from the target.
- The Value of Tough before the merger is Rs.2.4 million, while the target's market value is Rs.1 million. The market price per share of Tough's Share is Rs.50, and the required rate of return is 15 percent. Calculate the NPV for both a cash- financed and a Share- financed acquisition if Tough anticipates paying a 15% premium above the current market value of the target. (Retain the negative sign for the first two ΔCFS)

Question No: 16 Comprehensive-Post merger EPS
Ascertainment of Synergy on merger

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Better Enterprises has agreed to merge into Best. To accomplish the merger, 2 shares of Best will be exchanged for every share of Better. Before the merger, the firms were as follows:

	Better	Best
Earnings	Rs.10 lacs	Rs.15 lacs
Shares outstanding	5 lacs	5 lacs
EPS	Rs.2	Rs.3
P/E Ratio	10	8

After the merger the PE Ratio is 9.

- Calculate the Post merger EPS .
- How much of the value of the combined firm can be attributed to synergistic effects.
- Did the Shareholders of Better enterprises pain? How about Best's Shareholders.

Question No:17 Post merger EPS

M Co. Ltd., is studying the possible acquisition of N Co. Ltd. by way of merger. The following data are available in respect of the companies:

Particulars	M Co. Ltd.	N Co. Ltd.
Earnings after tax (Rs.)	80,00,000	24,00,000
No. of equity shares	16,00,000	4,00,000
Market value per share (Rs.)	200	160

- If the merger goes through by exchange of equity and the exchange ratio is based on the current market price, what is the new earning per share for M Co. Ltd.?
- N Co. Ltd. wants to be sure that the earning available to its shareholders will not be diminished by the merger. What should be the exchange ratio in that case?

Mutual Funds

Question No: 1 Annual Return

- a. A mutual fund had a net asset value (NAV) of Rs.50 at the beginning of the year. During the year a sum of Rs.4 was distributed as income (dividend) besides Rs.3 as capital gains distribution. At the end of the year NAV was Rs.55, calculate total return for the year.
- b. Suppose the aforesaid Mutual Fund in the next year gives a dividend of Rs.5 as income distribution and no capital gains distribution and NAV at the end of second year is Rs.50. what is the return for the second year.

Question No: 2 Annual Return

In case of an open ended Mutual Fund scheme the market price (Ex-dividend) was Rs.21. a dividend of Rs.4 has just been paid and Ex-dividend price now is Rs.23. what return has been earned over the past year. (To know more about us visit KalpeshClasses.com)

Question No: 3 Selection Criteria

Growmore firm is trying to decide between two investments funds. From past performance they were able to calculate the following average returns and standard deviations for these funds. The current risk-free rate is 8 per cent and the firm will use this as a measure of the risk-free rate.

	ABC Fund	XYZ Fund
Average return @ (per cent)	18	16
Standard deviation, σ (per cent)	20	15
Risk-free rate, $R_f = 8.0\%$		

Question No: 4 Sharpe Index

With a risk-free rate of 10%, and with the market portfolio having an expected return of 20% with a standard deviation of 8%, what is the Sharpe Index for portfolio X, with a mean of 14% and a standard deviation of 18%? For portfolio Y, having a return of 20% and a standard deviation of 16%? Would you rather be in the market portfolio or one of the other two portfolios?

Question No: 5 All Indices

JKL and PQR are the two mutual funds. JKL has a sample mean of success .13 and fund PQR has a sample mean of success .18, with the riskier fund PQR having double the beta at 2.0 as fund JKL. The respective standard deviations are 15% and 19%. The mean return for market index is .12, while the risk-free rate is 8%.

- (a) Compute the Jensen Index for each of the funds. What does it indicate?
- (b) Compute the Treynor index for the funds. Interpret the results and compare it to the Jensen index.
- (c) Compute the Sharpe Index for the funds and the market.

Question No: 6 Sharpe & Treynor

Six portfolios experienced the following results during at 7-year period:

Portfolio	Average Annual Return	Standard Deviation	Correlation with market
A	18.6	27.0	.81
B	14.8	18.0	.65
C	15.1	8.0	.98
D	22.0	21.2	.75
E	-9.0	4.0	.45
F	26.5	19.3	.63
Market Risk	13.0	12.0	
Free Rate	9.0		

- (a) Rank these portfolios using (i) Sharpe's method, and (ii) Treynor's method.
 (b) Compare the ranking in part (a) and explain the reasons behind the differences.

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Question No: 7 Performance Evaluation

Consider the following performance information on three portfolios:

	Treynor T_p	Sharpe S_p	Jensen J_p
Portfolio A	-4.0	-.5	-5.0
Portfolio B	8.0	1.2	3.0
Portfolio C	4.0	.3	0
XYZ Index	5.0	.6	0

- (a) Rank each of the portfolios using each of the performance measures. Are the rankings consistent for the three techniques?
 (b) Compare each portfolio's performance to the market's performance. Are the comparisons consistent for the three techniques?

Question No: 8 Performance Evaluation

The following are the data on Five mutual funds:

FUND	RETURN	STANDARD DEVIATION	BETA
Dhan Raksha	16	8	1.50
Dhan Varsha	12	6	0.90
Dhan Vredhi	14	5	1.40
Dhan Mitra	18	10	0.75
Dhan Laheri	15	7	1.25

What is the reward – to – variability ratio and the ranking if the risk –free rate is 7 percent?

Question No: 9 All measures

Consider the following information for three mutual funds, X, Y and Z, and the market.

	Mean return (%)	Standard deviation (%)	Beta
X	12	18	1.1
Y	10	15	0.9
Z	13	20	1.2
Market index	11	17	1.00

The mean risk-free rate was 5 percent. Calculate the Treynor measure, Sharpe measure, and Jensen measure for the three mutual funds and the market index.

Question No: 10 All measures

Consider the following information for three mutual funds, X, Y and Z, and the market.

	Mean return (%)	Standard deviation (%)	Beta
LM	15	20	0.90
RS	17	24	1.10
SSR	19	27	1.20
Market index	16	20	1.00

The mean risk-free rate was 10 percent. Calculate the Treynor measure, Sharpe measure, and Jensen measure for the three mutual funds and the market index.

Question No: 11 Weighted returns

A fund begins with Rs.200 crores and reports the following results for three periods:

Period	Rate of return in %	Net flow in crores of Rs.
1	5	10
2	12	50
3	16	30
4	3	0

Compute the arithmetic, time-weighted and rupee-weighted average returns.

Question No: 12 NAV

Name of the Scheme	: ABC
Size of the scheme	: Rs. 100 Crore
Face Value of the Share	: Rs. 10
Number of the outstanding shares	: Rs. 10 Crore
Market value of the fund's investments	: Rs.180 Crore
Receivables	: Rs. 1 Crore
Accrued Income	: Rs. 1 Crore
Liabilities	: Rs. 0.5 Crore
Accrued expenses	: Rs. 0.5 Crore

Find NAV?

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Question No: 13 Target earning

You can earn a return of 15 percent by investing in equity shares on your own. You are considering a recently announced equity mutual fund scheme where the initial issue expenses are 5 percent and recurring annual expenses are expected to be 2 percent. How much should the mutual fund scheme earn to provide a return of 15 percent to you?

**BRIEF TIME TABLE FOR NOVEMBER 2005 C.A. FINAL EXAMINATION.
SUBJECT : DIRECT TAX**

EXAMINATION	BRANCH	COMMENCING	ADMISSION STATUS
NOV 2005 (A.Y. 2005-2006)	ANDHERI	19-07-2005	In Progress
NOV 2005 (A.Y. 2005-2006)	CHARNI ROAD	24-05-2005	In Progress
NOV 2005 (A.Y. 2005-2006)	GHATKOPAR	17-07-2005	In Progress

Course Coverage for all the branches is the same.**All lectures are conducted by Professor Mr.Kalpesh Sanghavi Only.****Question No: 14 Target earning**

You can earn a return of 13 percent by investing in equity shares on your own. You are considering a recently announced equity mutual fund scheme where the initial issue expenses are 5 percent and the recurring annual expenses are expected to be 1.8 percent. How much should the mutual fund scheme earn to provide a return of 13 percent to you?

Question No: 15 Indifference point

You can earn a return of 14 percent by investing in equity shares on your own. You are considering a recently announced equity mutual fund scheme where the initial issue expenses are 6 percent. You believe that the mutual fund scheme will earn 16.5 percent. At what recurring expenses (in percentage terms) will you be indifferent between investing on your own and investing through the mutual fund.

Miscellaneous

Question No: 1 Factoring

The turnover of R Ltd. is Rs.60 Lakhs of which 80% is on credit. Debtors are allowed one month to clear off the dues. A factor is willing to advance 90% of the bills raised on credit for a fee of 2% a month plus a commission of 4% on the total amount of debts. R Ltd. as a result of this arrangement is likely to save Rs.21,600 annually in management costs and avoid bad debts at 1% on the credit sales.

A scheduled bank has come forward to make an advance equal to 90% of the debts at an interest rate of 18% p.a. However, its processing fee will be at 2% on the debts. Would you accept factoring or the offer from the bank?

Question No: 2 Factoring

A company makes annual credit sales of Rs.15 Lacs. Credit terms are 30 days, but its debt administrative has been poor and the average collection period has been 45 days with 0.5% of sales resulting in bad debts, which are written off.

A factor would take on task of debt administration and credit checking, at an annual fee of 2.5% of credit sales. The company would save Rs.30000 a year in administration costs. The payment period would be 30 days. The factor would also provide an advance of 80% of invoiced debts at an interest rate of 14%(3% over the current base rate). The company can obtain an overdraft facility to finance its debtors @ 2.5% over base rate. Should the factors' services be accepted? Assume a constant monthly turnover.

Question No:3 Certificate of Deposit

P Co. has to made payment of Rs.2 million (Rs.20 Lacs) on 16th April, 2000. It has a surplus money today i.e. 15th January, 2000 and the company has decided to invest in certificate of Deposit (CD's) of a leading nationalized bank at 8.00 p.a. What money is required to be invested now? Take year as 365 days.

Question No: 4 Commercial Paper

Ananta Chemicals Limited is considering raising of Rs 15 crore by issuing CPs for 120 days. CPs will be sold at a discount of 11.25 per cent. Stamp duty charges will be 0.5 per cent of the size of the issue. The issuing and other charges will amount to Rs. 3.75 lakh and rating charges to 0.40 per cent of the issue size. Calculate the effective cost of CP.

Question No.5 Commercial Paper

XY Ltd. is planning to sell a 90-day CP of Rs 100 for Rs 94.75. The company will have to incur expenses as follows: (a) rating of issue: 0.35 per cent, (b) stamp duty 0.5 per cent, (c) issuing charges 0.2 per cent and (d) dealer's fee 0.1 per cent. What is the cost of CP?

Question No:6 Sustainable Growth Rate

(A)A Ltd has an equity capital of Rs.12 million and total debt of Rs.8 million. Sales in the last year were Rs.30 million.

- a) It has target assets to sales ratio of 0.667
- b) The target NP Ratio is 0.04
- c) The target Debt equity Ratio is 0.667

d) The target earning retention rate of 0.75

In a steady state, what is its Sustainable Growth Rate?

(B) Suppose the company has established for the next year, target Asset to sales ratio of 0.62 and target NPr ratio of 0.05 and debt equity ratio of 0.80 and wishes to pay an annual dividend of Rs.3 million and raise Rs.1 million in equity capital next year. What is its SGR for next year?

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Question No:7 External Funds requirement

S Ltd. Has equity of Rs.6 Lacs issued at par. The following additional information is provided:

- Sales to net worth ratio is 5
- Growth rate in sales for the next year is 25%.
- Long-term loans are 1.5 times the retained earnings
- Outstanding creditors are half of long-term loans.
- Short-term bank borrowings are equal to outstanding creditors.
- Current assets are Rs.12 Lacs.
- Fixed assets to current assets ratio is 1:2.
- Dividend payout is twice the growth rate in sales.
- Profit margin is 40% of growth rate in sales.

You are required to construct the Balance Sheet and project the external funds requirement

Question No:8

Axle India Ltd's financial manager has forecast a Rs.1 million cash deficit for the next quarter. However, there is only a 50% chance this deficit will actually occur. The treasurer estimates that there is a 20% probability the company will have no deficit at all and a 30% probability that it will actually need Rs.2 million in short-term financing. The company can either take out a 90-day unsecured loan at 1% per month or establish a line of credit, costing 1% per month on the amount borrowed plus a commitment fee of Rs.20,000. Both

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alternatives also required a 20% compensating balance for outstanding loans. If excess cash can be reinvested at 9%, which source of financing gives the lower expected cost?

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FORMULAE

COST OF CAPITAL **K_e – Cost of Equity**

- (a) Constant dividend valuation model $= \frac{D_1}{P_0}$
- (b) Constant dividend growth model $= \frac{D_1 + g}{P_0}$
- (c) Price earning approach $= \frac{1}{\text{PE Ratio}} = \frac{\text{EPS}}{\text{MPS}}$

 K_p – Cost of Preference shares

$$\text{Irredeemable} = \frac{D}{P_0}$$

Redeemable**Alternative 1:**

$$\frac{\text{Dividend} + \{ (\text{Redemption value} - \text{Issue Price}) \div N \}}{(\text{Issue price} + \text{Redemption price} \div 2)}$$

Alternative 2:			
Use Capital Budgeting Techniques as follows			
Year	Events	Cash Flow	Appropriate Discount
0	Issue Price	Inflow	
1 – n	Preference Dividend (including Dividend tax)	Outflow	
N	Redemption value	Outflow	
			Nil

Such appropriate discount factor is the cost of preference shares

 K_d - Cost of debentures

$$\text{Irredeemable} = \frac{\text{Interest} \times (1 - \text{tax rate})}{\text{Issue Price}}$$

Redeemable - Use Similar formula & Capital Budgeting Technique

K_r = Cost of retained earnings

- $K_r - K_e$ – on account of opportunity cost
– it involves no floatation /issue based cost

WACC – Weighted Average Cost of Capital

Sources	Proportion	K	WACC
Equity	P_e	K_e	$P_e \times K_e$
Preference	P_p	K_p	$P_p \times K_p$
Debt	P_d	K_d (after tax)	$P_d \times K_d$
	1		K_o

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$$\text{Volatility of a Bond} = \frac{\text{Duration}}{1 + \text{YTM}}$$

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Walter's Dividend based price:

$$P_0 = \frac{D + (r \div K_e) \times [E - D]}{K_e}$$

Gordon's Dividend based price :

$$P_0 = \frac{D}{K_e - g}$$

P_0 – Present Price; D – Dividend

E – Earnings per share; K_e – Cost of equity

r – Rate of returns internally; b – retention ratio

D = Earnings x Payout ratio [or] $E \times (1 - b)$ and $g = b \times r$

RISK ANALYSIS:

Return of a security $\bar{r}$	= $\bar{r}_P \times r$
Variance of a security σ^2	= $\bar{r}_P \times (r - \bar{r})^2$
Standard Deviation of a security	= σ
Covariance of two security	= $P \times (r_a - \bar{r}_a) \times (r_b - \bar{r}_b)$
Correlation of Security(A, B)	= $\frac{\text{Cov}(A, B)}{\sigma_A \times \sigma_B}$

$$\text{Beta} = \frac{\frac{\sigma_s \times \text{Cov}(s, m)}{\sigma_m} \text{ (or) } \frac{\text{Cov}(s, m)}{(\sigma_m)^2}}$$

$$\text{Return of a portfolio} = P_a \times r_a + P_b \times r_b$$

$$\text{Risk of a portfolio} = (P_a^2 \times \sigma_a^2) + (P_b^2 \times \sigma_b^2) + (2P_a \times P_b \times \sigma_a \times \sigma_b \times \text{Cor}(a, b))$$

$$\text{Return of a security in a portfolio (Portfolio Theory)} \quad r_p = r_f + (r_m - r_f) \times \frac{\sigma_p}{\sigma_m}$$

$$\text{Return of a security in (Capital Asset Pricing Model)} \quad r_p = r_f + (r_m - r_f) \times \beta$$

Maxims :

Expected Return (given) = SML or CML [perfectly priced]

Action – Hold

Expected Return > SML or CML [under priced/under valued]

Action – Buy

Expected Return < SML or CML [overpriced or over valued]

Action – Sell

$$\hat{a}_{\text{Equity}} = \frac{\hat{a}_{\text{Assets}} \times 1 + D}{\text{Equity}} \rightarrow \text{No Tax}$$

$$\hat{a}_{\text{Equity}} = \left[\frac{1 + (1 - T) \times D}{\text{Equity}} \right] \times \hat{a}_{\text{unlevered firm}}$$

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DERIVATIVES:**Pricing of an Option under Black Scholes Model**

$$\text{Value of a Call Option} = P \times N(d_1) - (X) \times e^{-rt} \times N(d_2)$$

$$\text{Value of a Put Option} = (X) \times e^{-rt} \times N(-d_2) - P \times N(-d_1)$$

Ln (P/X) stands for Natural log of P/X or else a near approximate answer can be ascertained by using other formula:

$$\text{LN (P/X)} = \frac{\text{Log (P)} - \text{Log (X)}}{0.4346}$$

$$\text{Where } d_1 = \frac{\text{Ln(P/X)} + (r_f + (\sigma^2 / 2)) \times t}{\sigma \times \sqrt{t}}$$

$$d_2 = d_1 - \sigma \times \sqrt{t}$$

$N(d_1)$ = Normal table value of d_1

X = Strike Price (also denoted by K)

t = Time (in years)

r_f = Risk free Interest rate

$N(d_2)$ = Normal table value of d_2

σ = Standard deviation

Put – call Parity:

$$\text{Buy a stock} + \text{Buy a Put} = \text{Present value of Exercise price} + \text{Buy a call}$$

FUTURES:

Number of Futures to be

$$\text{bought or sold} = \frac{\text{Value of the portfolio} \times (\beta_2 - \beta_1)}{\text{Stock index value}}$$

If the value of the above formula is negative then the futures are to be sold or else purchased.

MUTUAL FUNDS:

$$\text{Sharpe Index (Reward to variability)} = \frac{\text{Expected Return} - r_f}{\sigma}$$

$$\text{Treynor Index (Reward to volatility)} = \frac{\text{Expected Return} - r_f}{\beta}$$

$$\text{Jenson's Alpha Index} = \text{Expected Return} - \text{SML}$$

$$\hat{\alpha}_{\text{unlevered firm}} = \frac{\hat{\alpha}_{\text{levered firm}} \times E}{E + D(1 - t)}$$

$$\text{Net Asset Value} = \frac{\text{Net Assets}}{\text{No. of shares}}$$

MERGERS, ACQUISITION & TAKEOVERS :

$$\text{Synergy} = \text{PV of AB} - (\text{PV of A} + \text{PV of B})$$

$$\text{Benefit - Cost} = \text{Purchase Consideration} - \text{PV of B}$$

$$\text{NPV (for A)} = \text{Benefit} - \text{Cost}$$

$$\text{NPV (for B)} = \text{Purchase Consideration received} - \text{PV of B}$$

Sentiments of the

Shareholders of	No of shares	MPS	Wealth
A (Purchasing Co.)	Same as	Should at least	Wealth is

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	before	be the same as before	protected
Y (Vendor Co.)	Different	Different	Same amount of wealth should be protected- is the minimum expectation

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