

SUGGESTED ANSWERS TO QUESTIONS

FINAL EXAMINATION

GROUP III

(SYLLABUS 2016)

DECEMBER 2021

Paper- 14: STRATEGIC FINANCIAL MANAGEMENT

Time Allowed: 3 Hours

Full Marks : 100

Section : A MCQ

20X1 = 20 Marks

Q.1 The intercept of the security market line on the y axis is

- Ans  1. the risk free return
2. the positive risk premium
3. the beta of the security
4. the expected return when  $\beta = 1$

Q.2 Security A has a total risk of 'a' and Security B has a total risk of 'b'. a is greater than

b. The following is true:

- Ans  1. If A has a higher systematic risk, B will have a higher unsystematic risk.
2. A has to have a higher systematic risk than B
3. A has to have at least the same amount of systematic risk as B
4. A can have a lower systematic risk than B

Q.3 The following is true of standard deviation of returns of a portfolio under CAPM:

- Ans  1. Market rewards the investor in proportion to the risk taken in the form of (the standard deviation of the portfolio  $\times (1-\rho)$ ), where  $\rho$  is the correlation coefficient between the portfolio and market returns
2. Standard deviation of the portfolio is the sum of the standard deviations of thesecurities in the portfolio
3. Standard deviation is a good measure to compare as it is the deviation per unit of themean return
4. Standard deviation is greater than the systematic risk of the portfolio

Q.4 The following various currency quotes are available:Rs. / 1£ 103.0213/ 103.5404

£ /1 \$ 0.7354 / 0.7385

\$ /100 ¥ 0. 8720 / 0. 8810

The rate at which 100 Yen (¥) can be purchased with rupees will be

Ans1. Rs. 66.40

2. Rs. 67.03
3. Rs. 66.06
4. Rs 67.37

Q.5 An option's theoretical value increases by 1.75 if the interest rate is decreased by 1%.Then, 1.75 is

- Ans  1. The rho of a put option
2. The rho of a call option
3. The theta of call option
4. The theta of a put option

Q.6 Which of the following is not an assumption of Black-Scholes Model?

- Ans  1. The risk-free rate of interest is known
2. Options can be exercised only at expiration
3. Dividend is paid on the shares
4. No imperfection exists in writing an option

**Q.7** An investor invested 40% of her money in Stock A and 60% in Stock B. Stock A has a beta of 1.2 and Stock B has a beta of 1.6. If the risk-free rate is 5% and the expected return on the market is 12%, the expected return of the investor would be the following under Capital Asset Pricing Model:

- Ans**
1. 10.08%
  - ✓ 2. 15.08%
  3. 14.80%
  4. 21.80%

**Q.8** The market price (ex-dividend) of a unit of an open-ended mutual fund scheme was ₹30 at the beginning of the year. A dividend of ₹3 has been paid during the year. The price of the unit is ₹35 at the year end. The rate of return of the past year of the unit is

- Ans**
1. 24.32%
  - ✓ 2. 26.67%
  3. 25.52%
  4. 28.56%

**Q.9** An investor has limited funds to invest. The following information of four securities is given below:

Particulars	Security A	Security B	Security C	Security D
Standard Deviation	10%	15%	11%	12%
Average Return	12%	20%	17%	15%

The best security to invest in if he wants more safety in relation to the return will be:

- Ans**
1. Security D
  - ✓ 2. Security C
  3. Security A
  4. Security B

**Q.10** A project has a 10% discounted pay back of 2 years with annual after tax cash inflows commencing from year end 2 to 4 of ₹400 lakhs. How much would have been the total project cash outlay which was made in two installments equally at the beginning and end of year 1?

- Ans**
1. ₹381.81 lakhs
  2. ₹347.11 lakhs
  - ✓ 3. ₹346.15 lakhs
  4. ₹330.58 lakhs

**Q.11** When the spot price decreases, the value of a call option

- Ans**
1. is equal to its premium
  - ✓ 2. decreases
  3. increases
  4. does not change

**Q.12** The following is true in a capital budgeting exercise with discounted cash flow technique:

- Ans**
- ✓ 1. When there is capital rationing, Net Present Value is better than the Internal Rate of Return.
  2. The Net Present Value highlights the significant minus cash flows occurring between the inflows when the incomes are being generated more than the Internal Rate of Return.
  3. When there are mutually exclusive proposals of different scales, the Internal Rate of Return is better than the NPV.
  4. The internal rate of return assumes that the cash flows are reinvested at the required rate of return.

**Q.13** The spot rate is USD 1 = Rs. 75.4035/75.9848. 3 months' swap points are 0.80-0.70. The forward rates are

- Ans**
1. 74.7035/75.1848
  2. 75.80/75.70
  - ✓ 3. 74.6035/75.2848
  4. 76.2035/76.6848

Q.14 Buying a call and put with the same expiry date, on the same stock with a different strike price is a

- Ans**  1. Strangle  
2. Strap  
3. Straddle  
4. Strip

Q.15 The spot and 3 months' forward rates of US \$ in relation to Rupee (Rs. /1 US \$) are Rs. 75.00 / 75.35 and Rs. 74.60/75.05 respectively. What will be the annualized forward discount (with respect to ask price)?

- Ans**  1. 1.59%  
2. 0.53%  
3. 0.40%  
4. 2.13%

Q.16 An Indian invested USD 1,00,000 in USA when the US\$ was Rs. 72. The investment has appreciated by 10%, while the US\$ has become stronger by 4%. The investment return in Rupees is

- Ans** 1. 6%  
2. 5.58%  
 3. 14.40%  
4. 9.60%

Q.17 The following is not a disadvantage of pay-back period as an evaluation measure for selecting a project:

- Ans** 1. Before the pay-back period, the mix of cash flows can be rearranged to get the same result  
2. It does not consider the magnitude of cash flows after the payback period.  
3. It can give a conflicting decision compared to the net present value method  
 4. A company that is cash-poor gauges the early recovery of funds invested.

Q. 18 An Indian Company is planning to invest in USA. The annual rates of inflation are 8% in India and 3% in USA. If the spot rate is currently Rs. 73.50/1\$, what spot rate can you expect after 2 years, assuming the inflation rates will remain the same over 2 years?

- Ans** 1. Rs. 66.85  
 2. Rs. 80.81  
3. Rs. 70.09  
4. Rs. 77.07

Q. 19 A buy signal provided by moving average analysis of stock prices is when the stock price line

- Ans** 1. rises above a falling moving average line  
2. falls below a flattening moving average line.  
3. falls below a falling moving average line  
 4. falls below a rising moving average line

Q. 20 X imports goods from USA. X will not do the following as a hedging measure:

- Ans** 1. Buy call options  
2. Buy currency forward  
 3. Buy put options  
4. Buy currency futures

Q.1 Y is an instrument that entitles the holder to buy the underlying stock from the issuer company itself at a fixed exercise price until the expiration date. Identify Y.

Answer: Y is a warrant.

Q.2 The spot Nifty is ₹ 18,150. An investor purchases fifty one-month Nifty put options (lot size 50) with a strike price of Rs 18,200 for a premium of ₹ 60. One month later, if the index closes at ₹ 18,160, what is his net pay-off?

Answer: ₹ 50,000 loss

Q.3 A company's equity  $\beta$  is 1.6 and debt  $\beta$  is 0.20. Its debt ratio is 25%. What is its asset  $\beta$ ?

Answer:  $\beta = 1.25$

Q.4 The current spot and one year forward rates between 1US\$ and ₹ are ₹ 73.42 and 74.56 respectively. Annual inflation rate in India is expected at 6%. What is the expected annual inflation rate in US?

Answer: 4.38 %

Q.5 X Ltd. has two divisions. Division A has a market value of Rs.5 Cr. and a beta of 1.2, while Division B has a market value of Rs.3 Cr. and a beta of 0.9. What is the company's asset beta?

Answer: 1.0875

Q.6 An investor owns a stock portfolio consisting of four stocks. He has invested 20% in stock A; 25% in stock B; 30% in stock C and 25% in stock D. The betas of these four stocks are: 0.9, 1.3, 1.2 and 1.7 respectively. What is the beta of the portfolio?

Answer: 1.29

Q.7 X is a type of negotiable financial security that is traded on a local stock exchange but represents an equity that is issued by a foreign publicly listed company. Identify X.

Answer: Depository Receipt

Q.8 You are given the following information of a stock: Strike Price ₹400 Current stock price ₹370 Risk free rate of interest 6%

Find the theoretical minimum price of a three months' European put option.

Answer: ₹24.04

Q.9 The following details relate to an investment proposal of XYZ Ltd. Investment outlay is ₹100 lakhs Lease Rentals are payable at ₹180 per ₹1,000 Term of lease is 8 years Discount rate to be applied is 12% What is the present value of lease rentals (ignoring tax), if lease rentals are payable at the beginning of the year?

Answer: 100,15,200

**Q.10** A, an American company has to pay 1,00,000 Euros to a European company in onemonth's time. A converts USD at current spot rate an amount less than 1,00,000 Euros and loans out the Euros for 30 days so that it grows to 1,00,000 Euros at themonth end to pay off its dues. This is an example of \_\_\_theory.

**Answer:** Covered Interest Rate parity theory.

**Q.11** The face value of a 182 day T-Bill is Rs. 100. If the purchase price is Rs. 98.5 after 10days of issue, calculate the yield of the T- Bill.

**Answer:** 3.23%

**Q.12** If the Future Spot Price is less than the Forward Rate what action should be takenby an arbitrageur?

**Answer:** Sell Forward and Buy Spot.

**Q.13** Farmers and food processing companies come under the\_\_\_category ofcommodity market participants.

**Answer:** Hedger

**Q.14** If an equipment costs ₹20,00,000 and lasts 8 years, what should be the minimum pre-discounted equal annual cash inflow for it to be worthwhile to purchase theequipment ? Assume that the cost of capital is 14% and that there is no salvage value.

**Answer:** Rs. 4,31,128

**Q.15** K owns 10000 shares of stock A. He is anxious about the budget next week. Onecontract on A is 100 shares. He will\_\_\_buy/sell\_\_number of futures contracts to have 40 % hedging coverage.

**Answer:** Sell 40 contracts

**Q.16** A put option with a strike price of Rs. 160 is traded in the market at Rs. 8. The spotprice is Rs. 170. The intrinsic value of the option is \_\_\_\_\_

**Answer:** 0

**Q.17** An investor has ₹ 5,00,000 to invest. What will be his expected risk premium (%) in investing in equity versus risk-free securities under the following conditions?

Investment	Probability	Expected return
Equity	0.6	₹2,00,000
	0.4	(-) <u>Rs. 1,50,000</u>
Risk-free security	1.0	<u>Rs. 25,000</u>

**Answer:** 7%

**Q.18** Droner Ltd. is an Indian company that wishes to buy 100 drones for rescue operations in the mountain regions for letting out on hire to Indian clients. Its charges are fixed per hour of hire for the next two years. The cost of one drone is 5000 US\$. It wants to cover its exposure to pay US\$ after three months by buying \_\_\_(call/put) option on rupees. The option lapses when \_\_\_\_\_(₹/ \$) appreciates.

**Answer:** Put; Rupee

**Q.19** An investor has invested in a mutual fund when the NAV was ₹15.50 per unit. After 90 days the NAV was ₹14.45 per unit. During the period the investor got a cash dividend of ₹1.35 per unit and capital gain distribution of ₹ 0.20. Calculate the annualized return based on 360 days year count.

**Answer:** 12.9%

**Q.20** Consider the following data relating to a security: Rate of inflation=2.1% Beta=0.60 Real rate of return = 4.2% Market return=8.6%. What is its risk premium?

**Answer:** 1.38% or, alternatively, 3.08%

Section : C  
(4X12 = 48 Marks)  
ONE LAQ

**Q.1** You are given the following data relating to a project: Initial Outlay (Project Cost) ₹1,20,00,000 Annual Cash Inflow (at each year end) ₹45,00,000 (After 40% tax) Life of the Project 4 years Cost of Capital 10% (weighted average cost after tax) Salvage Value Nil

(Sensitivity should be calculated by setting NPV to zero and should be expressed as a percentage. Ignore depreciation. Round off rates to the nearest whole numbers while referring to the table values).

2+2+2+2+4 = 12 Marks

- (i) Find the Net Present Value (NPV) using the given 10% discount rate.
- (ii) Determine the sensitivity of the annual cash inflows.
- (iii) Determine the sensitivity of the project cost.
- (iv) Determine the sensitivity of the cost of capital.
- (v) After (i) to (iv), if you are given the following information:  
Equity beta = 1.2, market return = 11 %, risk free rate = 6 %, debt cost is 8% after tax of 40% and debt and equity are in equal proportion, what would be the NPV if the tax rate falls to 30 %?

**Answer:**

- (i) Net Present Value (NPV) = Rs. 22,65,000
- (ii) Sensitivity of annual cash Inflow = 15.88%
- (iii) Sensitivity of the project cost = 18.88%
- (iv) Approximately 18 %
- (v) NPV at 11% = Rs. 42,85,500 or Rs. 44,27,250 (If Wtd.avg cost of capital after tax considered as 10.67% instead of 11%)

TWO LAQ

**Q.1** The following information is available for Mutual Fund A, Mutual Fund B and Market Portfolio (M) for six months:

6+3+3 = 12 Marks

Month (2021)	April	May	June	July	August	September
Fund	Return (%)					
Fund A	3.00	1.75	(1.00)	3.50	1.50	0.00
Fund B	2.25	(1.25)	0.00	3.00	2.50	1.00
Market Portfolio(M)	1.00	(0.75)	2.00	1.50	0.25	3.50

Risk-free interest rate is 6% p.a.

- (i) Compute Average Returns (AR), Risk of Losses (RL) of Funds A, B and M.
- (ii) Compute the Morning Star Index of A, B and M.
- (iii) Compute the standard deviation (s.d) of the returns of A, B and calculate the SharpeRatio of A.

**Answer:**

- (i) **Average Returns:**  
 Fund A = 1.46  
 Fund B = 1.25  
 Market Portfolio = 1.25

**Risk of Losses:**  
 Fund A = 0.33  
 Fund B = 0.38  
 Market Portfolio = 0.25

- (ii) **Morning Star Index:**  
 Fund A = 1.13  
 Fund B = 0.87  
 Market Portfolio = 1.00

- (iii) **Standard Deviation of the Returns:**  
 Fund A = 1.57  
 Fund B = 1.5  
  
**Sharpe Ratio:**  
 Fund A = 0.611



### THREE LAQ

**Q.1** Shares of M Ltd. are currently trading at Rs. 190. At the end of three months, the stock price is expected to be Rs. 125 or Rs. 225 with respective probabilities 1/3 and 2/3. The 3-months' European call option on M Ltd. is available with an exercise price of Rs.175. The risk-free rate of interest is 6% per annum continuously compounded.

- (i) Find out the value of a 3-month European Call under the Binomial Model (Delta Method).
- (ii) Calculate the value of the put option under Put-Call Parity.
- (iii) If an investor wants to buy 100 shares, how many call options should be transacted in for a complete hedge? Present workings to prove that the risk is covered.
- (iv) What is the expected value of the option and also of the stock price at the end of three months?

3+3+4+2 = 12 Marks

**Answer:**

- (i) Value of Call Option = Rs.33.43
- (ii) Value of Put Option = Rs.15.82
- (iii) If an investor wants to buy 100 shares, he has to sell 200 call options since option delta is 1/2. His position at the end of 3 months will be:

Stock price at the end of 3 m	Value of long position in stock	Value of short position in option	Value of combined hedged position
225	100 x 225 =22500	-200 x 50 = -10000	12500
125	100 x 125=12500	0	12500

Thus his position is hedged, whichever be the price, 225 or 125 three months later.

- (iv) Expected value of option = Rs. 33.33  
Expected value of stock price 3 months later = Rs. 191.67

## FOUR LAQ

An investor has the following four stocks in his portfolio:

3+3+2+4 = 12 Marks

Security	No. of shares	Market Price per share (₹)	Beta ( $\beta$ )
A	6000	40	0.9
B	3000	20	1.0
C	5000	25	1.5
D	1000	225	1.1

- (i) Compute the portfolio beta ( $\beta$ ).
- (ii) If the investor seeks to reduce the  $\beta$  to 0.8, how much risk-free investment should he bring in?
- (iii) Independent of (ii), if the investor would like to have an overall weighted  $\beta$  of 1.02 without bringing in more money, by selling shares of C and buying A instead, How many shares of C should be sold?
- (iv) Independent of (ii), if the investor would like to have an overall weighted  $\beta$  of 1.02 without bringing in more money, by selling shares of C and buying A instead, What would be the revised weighted  $\beta$  of A, B, C and D?

**Answer:**

- (i) Portfolio Beta = 1.094 or 1.0938
- (ii) ₹2,38,828
- (iii) 3296.69 shares of C should be sold.
- (iv) Revised weighted Beta = 1.01775 or 1.02

## FIVE LAQ

An ayurvedic product is manufactured by 'A' with turmeric as the basic ingredient. A requires 50000 kg of turmeric three months later for processing. The current spot price is Rs. 7380 per quintal. A futures contract on turmeric with three months to maturity is trading at Rs.7400 per quintal. One contract of turmeric is 10 MT with a 12% margin. (1 MT= 1000 kg and 1 quintal = 100 kg).

2+3+2+2+3 = 12 Marks

A wishes to hedge 60 % of his requirement using futures.

- (i) What is his position in the spot market and the futures market?
- (ii) How many futures contracts should he transact in? Will he buy or sell futures? What is the amount of margin required?
- (iii) At the end of three months, if the price increases to Rs. 7450 per quintal, what is the effective price he would pay for the quantity hedged with futures? What is his benefit by the futures contract?
- (iv) Independent of (iii), if the prices fell to Rs. 7350 per quintal, what would be his effective price per quintal for his total requirement?
- (v) Suggest two other ways in which he could have hedged his risk and state the disadvantage with each.

### Answer:

- (i) A is short in the spot market. He takes the opposite position in the futures market. He will be long in futures market.
- (ii) Rs. 2,66,400
- (iii) Futures Market: Gain Rs. 50/q =  $(7400-7450)Rs/q \times 300q = (15,000)$   
Net effective price per quintal = 7400Rs/q
- (iv) Effective price he has to pay Rs/q 7400
- (v) He could have used forward contracts, whereby similar hedging could have been done using a tailor made forward contract. Margin would not be necessary, but the contract itself may not be honoured and counterparty risk is not assumed by an exchange. The other way is to buy the turmeric physically and stock. But this would entail storage costs and investment outlay.  
Other instruments like swaps and options may be used to offset price risk. Options will cost him the premium while swaps have counterparty risks.  
Agri index has also been recently introduced. Options and futures on indexes can also be done.  
Premium cost, probability of loss for options and margin, contract size may be unsuitable for futures.

Q.1 Write Short Notes on Leading and Lagging in foreign exchange management.

3 Marks

**Answer:** Leading and Lagging.

It refers to the adjustment of the times of payments that are made in foreign currencies. Leading is the payment of an obligation before due date while lagging is delaying the payment of an obligation past due date. The purpose of these techniques is for the company to take advantage of expected devaluation or revaluation of the appropriate currencies. Lead and lag payments are particularly useful when forward contracts are not possible. It is more attractive to use for the payments between associate companies within a group. Leading and lagging are aggressive foreign exchange management tactics designed to take the advantage of expected exchange rate changes.

Q.2 Write Short Notes on The Efficient Frontier in portfolio comparison.

3 Marks

**Answer:** Efficient Frontier.

Markowitz developed the concept of efficient frontier. For selection of a portfolio, comparison between combinations of portfolios is essential. A portfolio is not efficient if there is another portfolio with —

- Higher expected value of return and a lower standard deviation (risk).
- Higher expected value of return and the same standard deviation (risk).
- Same expected value but a lower standard deviation (risk).

Q.3 Write Short Notes on Exposure netting of currency.

3 Marks

**Answer:** Exposure Netting.

Exposure netting is the act of offsetting exposures in one currency with exposures in the same or another currency. Example: If an entity has Dollar Receivables, which is exposed to currency risk, it may enter into an offsetting position by entering into a Dollar Payable arrangement.

Objective: The objective of netting is to offset the likely loss in one exposure, with the likely gain in another.

Hedging tool: It is a form of hedging foreign exchange risks. When a Firm opts for exposure netting, it hedges its risk without taking any forward cover or options cover.

Q.4 Write Short Notes on Asset-Backed Risk.

3 Marks

**Answer:** Asset-Backed Risk.

It is the risk that the changes in values of one or more assets that support an asset-backed security will significantly impact the value of the supported security. This kind of risk especially arises in securitisation transactions where by cash flows due on assets/receivables are pooled together to issue securities, the servicing of which is backed by the cash flows on such underlying assets.

Q.5 Write Short Notes on Foreign Currency Convertible Bonds.

3 Marks

**Answer:** Foreign Currency Convertible Bonds

A foreign currency convertible Bond (FCCBs) is a quasi-debt instrument that is issued in a currency other than the issuer's domestic currency. Over the last few years, a majority of Indian Companies issuing FCCBs raised fund in several foreign currency. FCCBs could have a coupon rate of zero but have yield on maturity or FCCBs could also carry lower interest rate and yield on maturity. This is a bullet payment of interest at maturity if the bondholder opts for redemption.

This bond is a mix between the debt and equity instrument and provides the bondholders an option to convert the bonds into equity. This bond gives the issuers an ability to access capital available in foreign markets and make their presence felt in the international market.

**Q.1** XYZ Ltd. is a company that has been a market leader for a considerable period of time. It makes strategic improvements to existing products or transforms products through latest technology and has been able to be sufficiently above competition. It has a wide range of products which are all profitable.

One of its products ' X ' is in the maturity stage of its lifecycle and XYZ has identified a start-up (SU) which has successfully improved upon the product and has made it viable and attractive as value for money. XYZ is keen to buy up the know-how of SU at 50 lacs (to be paid at the beginning of year 1) and release the product as its own upgraded version of X. This cost will be amortised equally over five years at year-ends. If it does not act now, competition is sure to do it and XYZ may lose out on its market position. However, XYZ has a team to evaluate the financials using appropriate capital budgeting techniques and present an analysis before it takes a deliberate decision to phase out X or sustain its improved version. The following information is available:

SU recommends an intermediary process to be done before the finishing stage of X to transform it into its new version. The machinery available to fulfill the estimated demand has to be purchased at Rs. 100 crores. A further sum of Rs. 20 crores will have to be spent for its transport and installation at the beginning of year 1. The new machine will last for five years after which there is no significant residual value. It may be depreciated accordingly, equally over five years.

The old version of X will also be made in addition to the new one. The contribution from the new version's sales will be Rs. 60 lacs per annum before tax. However, sales of the old version will decline resulting in a loss of the usual annual contribution by Rs. 18 lacs, of which Rs. 6 lacs can be attributed to shifting of sales to the new version instead of the old and the remaining due to the normal fall in demand due to its lifecycle stage.

In order to make this new machine functional, it has to be installed in a portion of the land in the factory which was until now fetching an annual lease rent of Rs. 2,00,000 before tax. This lease will have to be cancelled at no penalty cost and used for the new machine.

Due to the increased production and sales, working capital will have to be introduced to the extent of Rs. 30 lacs at the beginning of the first year and this will be released at the end of five years.

It is the policy of XYZ to adhere to its target capital structure in the long term to evaluate projects. Finance is also raised in the same manner. Accordingly, 60% of the cost is funded by equity capital which costs 12% p.a. and 40 % is funded by debt which costs 10 % before taxes (30 % tax rate). Interest amounts on debts are to be paid at the end of each year and the principal is returned in one full repayment after 5 years.

XYZ requires you to evaluate whether the purchase of the new machine is justified considering its Net Present Value (NPV).

- (i) Calculate the NPV and advise XYZ if it should go in for the new version of X. (Write only the NPV value and your advice in the answer box on the computer screen.)  
Suggested Rough Work: (Use '+' for inflows and '-' or '(' ) for outflows. Display Rs in lacs up to two decimals. Use PV factors up to 3 decimals.
- (ii) Compute the discount rate to be applied to the cash flows for evaluation of the proposal with a brief reasoning for your choice.
- (iii) Identify cash flows that you will consider irrelevant in determining the NPV under i) and briefly state why you consider them irrelevant.

**Answer:**

(i) Net Present Value(NPV) = Rs. - 4.71 lacs

Advice : XYZ should not go in for the new version.

(ii) The Cost of capital is 10 % after tax, computed as follows:

$K_e$  = Cost of equity = 12 %.

$K_d$  = After tax cost of debt =  $10\% (1-0.3) = 10\% \times 0.7 = 7\%$

Weighted average cost of capital is the discount factor rate to be used in the capital budgeting decision. This works out to  $60\% K_e + 40\% K_d = 0.6 \times 12 + 0.4 \times 7 = 10\%$ . We are not evaluating whether to borrow or use own funds. Viability of an investment is concerned only with the cash flows that a project brings to its equity and debt funders. Hence principal and interest cash flows, which are part of financing decision, will not figure in the choice of discount rate. Since cash flows are after tax, we compute the aftertax cost of capital, which is cost of equity (no tax element) and cost of debt (after tax) in the given ratio.

(iii) Irrelevant cash flows: Interest and principal costs of financing Contribution lost on old X due to its stage in lifecycle Rs. 12 lacs

Gain in contribution is 60 lacs. Less loss in old version of X due to new X = 6 lacs. Net gain is Rs.  $60 - 6 = 54$  lacs. Gain after tax =  $0.7 \times 54 = 37.8$  lacs. The other 12 lacs of loss in contribution of old X is irrelevant cash flow since this loss exists in the old and new versions of X.

Cost of the machine = 100 + transport + installation =  $100 + 20 = 120$  lacs. Depreciation per annum = 24 lacs. Tax benefit on depreciation =  $0.3 \times 24 = +7.2$  lacs.

Rs. 50 lacs for know how is amortised at Rs. 10 lacs every year end. Tax benefit = 3 lacs p.a. Interest outflows and principal repayment should not be considered in the capital budgeting decision as they do not arise out of the deployment of the machine. That is a financing decision and not an investment decision. Only cash flows relating to the investment decision are to be considered for NPV. However, the cost of raising the funds will be the long term target cost of capital since the marginal cost of capital may give misleading decisions on investments by choosing the lower than best investment proposals.

Moreover, financing the project is from debt and equity. Cash flows that have to be considered are those that accrue to debt and equity. Hence interest is not part of the cash flows for evaluation.