

PAPER – 2 : MANAGEMENT ACCOUNTING AND FINANCIAL ANALYSIS

Question No. 1 is compulsory. Answer any four questions from the rest. Working notes should form part of the answer.

Question 1

- (a) Shivam Ltd. is considering two mutually exclusive projects A and B. Project A costs Rs.36,000 and project B Rs.30,000. You have been given below the net present value probability distribution for each project.

Project A		Project B	
NPV estimates (Rs.)	Probability	NPV estimates (Rs.)	Probability
15,000	0.2	15,000	0.1
12,000	0.3	12,000	0.4
6,000	0.3	6,000	0.4
3,000	0.2	3,000	0.1

- (i) Compute the expected net present values of projects A and B.
 - (ii) Compute the risk attached to each project i.e. standard deviation of each probability distribution.
 - (iii) Compute the profitability index of each project.
 - (iv) Which project do you recommend? State with reasons. (14 Marks)
- (b) Presently a company is working with an earning before interest and taxes (EBIT) of Rs.90 lakhs. Its present borrowings are as follows:

	Rs. in lakhs
12% term loan	300
Working capital borrowings:	
Borrowing from bank at 15%	200
Fixed deposits at 11%	90

The sales of the company are growing and to support this, the company proposes to obtain additional borrowing of Rs.100 lakhs at a cost of 16%. The increase in EBIT is expected to be 18%. Calculate the present and the revised interest coverage ratio and comment. (6 Marks)

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Answer

- (a) (i) Statement showing computation of expected net present value of Projects A and B :

Project A			Project B		
NPV Estimate (Rs.)	Probability	Expected Value	NPV Estimate	Probability	Expected Value
15,000	0.2	3,000	15,000	0.1	1,500
12,000	0.3	3,600	12,000	0.4	4,800
6,000	0.3	1,800	6,000	0.4	2,400
3,000	0.2	600	3,000	0.1	300
	1.0	EV = 9,000		1.0	EV = 9,000

- (ii) Computation of Standard deviation of each project

Project A

P	X	(X – EV)	P (X-EV) ²
0.2	15,000	6,000	72,00,000
0.3	12,000	3,000	27,00,000
0.3	6,000	- 3,000	27,00,000
0.2	3,000	- 6,000	72,00,000
			Variance = 1,98,00,000

Standard Deviation of Project A = $\sqrt{1,98,00,000}$ = Rs.4,450

Project B

P	X	(X – EV)	P (X-EV) ²
0.1	15,000	6,000	36,00,000
0.4	12,000	3,000	36,00,000
0.4	6,000	- 3,000	36,00,000
0.1	3,000	- 6,000	36,00,000
			Variance = 1,44,00,000

Standard Deviation of Project A = $\sqrt{1,44,00,000}$ = Rs.3,795

- (iii) Computation of profitability of each project

Profitability index = Discount cash inflow / Initial outlay

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$$\text{In case of Project A : PI} = \frac{9,000 + 36,000}{36,000} = \frac{45,000}{36,000} = 1.25$$

$$\text{In case of Project B : PI} = \frac{9,000 + 30,000}{30,000} = \frac{39,000}{30,000} = 1.30$$

- (iv) Measurement of risk is made by the possible variation of outcomes around the expected value and the decision will be taken in view of the variation in the expected value where two projects have the same expected value, the decision will be the project which has smaller variation in expected value. In the selection of one of the two projects A and B, Project B is preferable because the possible profit which may occur is subject to less variation (or dispersion). Much higher risk is lying with project A.

(b) Present EBIT = Rs.90 lakhs

Interest Charges (Present)	(Rs. in lakhs)
Term Loan @ 12%	36.00
Bank Borrowings @ 15%	30.00
Public Deposit @ 11%	<u>9.90</u>
	<u>75.90</u>

$$\text{Present Interest Coverage Ratio} = \frac{\text{EBIT}}{\text{Interest Charges}}$$

$$\text{or } \frac{\text{Rs.90 Lakhs}}{\text{Rs.75.90 Lakhs}} = 1.19$$

$$\text{Revised EBIT} = \text{Rs.90 lakhs} \times \frac{118}{100} = \text{Rs. 106.2 lakhs}$$

Proposed interest charges	(Rs. in lakhs)
Existing charges	75.90
Add: Additional Charges (16% on 100 lakhs)	<u>16.00</u>
Total	<u>91.90</u>

$$\therefore \text{ Revised Interest Coverage Ratio} = \frac{\text{Rs.106.2 lakhs}}{\text{Rs.91.90 lakhs}} = 1.16$$

Analysis: With the proposed increase in the sales the burden of interest on additional borrowing of Rs.100 lakhs will adversely affect the interest coverage ratio which has been reduced by 3% (from 1.19 to 1.16).

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Question 2

- (a) Following information is provided relating to the acquiring company Mani Ltd. and the target company Ratnam Ltd:

	Mani Ltd.	Ratnam Ltd.
Earnings after tax (Rs. lakhs)	2,000	4,000
No. of shares outstanding (lakhs)	200	1,000
P/E ratio (No. of times)	10	5

Required:

- (i) What is the swap ratio based on current market prices?
 - (ii) What is the EPS of Mani Ltd. after the acquisition?
 - (iii) What is the expected market price per share of Mani Ltd. after the acquisition, assuming its P/E ratio is adversely affected by 10%?
 - (iv) Determine the market value of the merged Co.
 - (v) Calculate gain/loss for the shareholders of the two independent entities, due to the merger. (10 Marks)
- (b) X Ltd. reported a profit of Rs.65 lakhs after 35% tax for the financial year 2007-08. An analysis of the accounts revealed that the income included extraordinary items Rs.10 lakhs and an extraordinary loss Rs.3 lakhs. The existing operations, except for the extraordinary items, are expected to continue in the future; in addition, the results of the launch of a new product are expected to be as follows:

	Rs. lakhs
Sales	60
Material costs	15
Labour Costs	10
Fixed costs	8

You are required to :

- (a) Compute the value of the business, given that the capitalization rate is 15%.
- (b) Determine the market price per equity share, with X Ltd.'s share capital being comprised of 1,00,000 11% preference shares of Rs. 100 each and 40,00,000 equity shares of Rs. 10 each and the P/E ratio being 8 times. (10 Marks)

Answer

- (a) (i) SWAP ratio based on current market prices:

EPS before acquisition:

Mani Ltd. : Rs.2,000 lakhs / 200 lakhs: Rs.10

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Ratnam Ltd.: Rs.4,000 lakhs / 1,000 lakhs: Rs. 4

Market price before acquisition:

Mani Ltd.: Rs.10 × 10 Rs.100

Ratnam Ltd.: Rs.4 × 5 Rs. 20

SWAP ratio: 20/100 or 1/5 i.e. 0.20

(ii) EPS after acquisition:

$$\frac{\text{Rs. (2,000 + 4,000) Lakhs}}{(200 + 200) \text{ Lakhs}} = \text{Rs.15.00}$$

(iii) Market Price after acquisition:

EPS after acquisition : Rs.15.00

P/E ratio after acquisition 10 × 0.9 9

Market price / share (Rs. 15 X 9) Rs.135.00

(iv) Market value of the merged Co.:

Rs.135 × 400 lakhs shares Rs. 540.00 Crores
or Rs. 54,000 Lakhs

(v) Gain/loss per share:

	Rs. Crore	
	Mani Ltd.	Ratnam Ltd.
Total value before Acquisition	200	200
Value after acquisition	<u>270</u>	<u>270</u>
Gain (Total)	<u>70</u>	<u>70</u>
No. of shares (pre-merger) (lakhs)	200	1,000
Gain per share (Rs.)	35	7

(b) (Rs. Lakhs)

(a) Profit before tax $\frac{65}{1-0.35}$	100
Less: Extraordinary income	(10)
Add: Extraordinary losses	3
	<u>93</u>

Profit from new product

Sales 60

Less: Material costs 15

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Labour costs	10		
Fixed costs	<u>8</u>	<u>(33)</u>	<u>27</u>
Expected profits before taxes			120
Taxes @ 35%			<u>(42)</u>
Profit after taxes			<u>78</u>
Capitalization rate	15%		
Value of business	$\frac{\text{Rs.78Lakhs}}{0.15} =$		520
(b) Future maintainable profits (After Tax)			78
Less: Preference share dividends			
100,000 shares of Rs.100 @ 11%			<u>(11)</u>
			<u>67</u>
Earning per share	$= \frac{\text{Rs.67,00,000}}{40,00,000} =$		Rs.1.675
PE ratio			8
Market price per share			Rs.13.40

Question 3

- (a) Sundaram Ltd. discounts its cash flows at 16% and is in the tax bracket of 35%. For the acquisition of a machinery worth Rs.10,00,000, it has two options – either to acquire the asset by taking a bank loan @ 15% p.a. repayable in 5 yearly installments of Rs.2,00,000 each plus interest or to lease the asset at yearly rentals of Rs.3,34,000 for five (5) years. In both the cases, the instalment is payable at the end of the year. Depreciation is to be applied at the rate of 15% using 'written down value' (WDV) method. You are required to advise which of the financing options is to be exercised and why.

Year	1	2	3	4	5
P.V factor @16%	0.862	0.743	0.641	0.552	0.476

(14 Marks)

- (b) Briefly explain the terms "capital rationing". (6 Marks)

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Answer

(a) Alternative I: Acquiring the asset by taking bank loan:

Years	1	2	3	4	5
(a) Interest (@15% p.a. on opening balance)	150,000	120,000	90,000	60,000	30,000
Depreciation (@15%WDV)	<u>150,000</u>	<u>127,500</u>	<u>108,375</u>	<u>92,119</u>	<u>78,301</u>
	300,000	247,500	198,375	152,119	108,301
(b) Tax shield (@35%)	<u>105,000</u>	<u>86,625</u>	<u>69,431</u>	<u>53,242</u>	<u>37,905</u>
Interest less Tax shield (a)-(b)	45,000	33,375	20,569	6,758	(-)7,905
Principal Repayment	<u>2,00,000</u>	<u>2,00,000</u>	<u>2,00,000</u>	<u>2,00,000</u>	<u>2,00,000</u>
Total cash outflow	2,45,000	2,33,375	2,20,569	2,06,758	1,92,095
Discounting Factor @ 16%	<u>0.862</u>	<u>0.743</u>	<u>0.641</u>	<u>0.552</u>	<u>0.476</u>
Present Value	2,11,190	1,73,397	1,41,385	1,14,131	91,437

Total P.V of cash outflow = Rs.731,540

Alternative II: Acquire the asset on lease basis

Year	Lease Rentals Rs.	Tax Shield @35%	Net Cash Outflow	Discount Factor	Present Value
1.	3,34,000	1,16,900	2,17,100	0.862	1,87,140
2.	3,34,000	1,16,900	2,17,100	0.743	1,61,305
3.	3,34,000	1,16,900	2,17,100	0.641	1,39,161
4.	3,34,000	1,16,900	2,17,100	0.552	1,19,839
5.	3,34,000	1,16,900	2,17,100	0.476	1,03,340
Present value of Total Cash out flow					7,10,785

Advice -By making Analysis of both the alternatives, it is observed that the present value of the cash outflow is lower in alternative II by Rs.20,755 (i.e.Rs.731,540 – Rs.7,10,785) Hence, it is suggested to acquire the asset on lease basis.

- (b) Capital rationing refers to a situation where a company cannot undertake all positive NPV projects it has identified because of shortage of capital under such situation. A decision maker is compelled to reject some of the viable projects, this is known as a situation involving capital rationing .

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Following questions are very much relevant, in terms of financing investment projects.

- (i) What would be the requirement of funds for capital investments in the forthcoming planning period?
- (ii) How much fund is available for capital investment?
- (iii) How to allocate available fund to viable investment proposals?

Profitability index may be used to rank the viable investment proposals to facilitate ultimate selection.

In Capital rationing, it may also be more desirable to accept several small investment proposals than a few large investment proposals so that there may be full utilization of budgeted amount. This may result in accepting relatively less profitable investment proposals in full utilization of budget is a primary consideration capital rationing may lead to a situation where a firm foregoes the next most profitable investment considering the budget ceiling even though it is estimated to yield a rate of return much higher than the required rate of return.

Thus capital rationing may not always lead to optimum results.

Question 4

- (a) The equity share of VCC Ltd. is quoted at Rs. 210. A 3-month call option is available at a premium of Rs.6 per share and a 3-month put option is available at a premium of Rs. 5 per share. Ascertain the net payoffs to the optionholder of a call option and a put option.
 - (i) the strike price in both cases in Rs. 220; and
 - (ii) the share price on the exercise day is Rs. 200,210,220,230,240.

Also indicate the price range at which the call and the put options may be gainfully exercised. (10 Marks)

- (b) A mutual fund that had a net asset value of Rs.16 at the beginning of a month, made income and capital gain distribution of Rs.0.04 and Rs.0.03 respectively per unit during the month, and then ended the month with a net asset value of Rs.16.08. Calculate monthly and annual rate of return. (4 Marks)
- (c) Explain the term "debt securitisation". (6 Marks)

Answer

- (a) Net payoff for the holder of the call option (Rs.)

Strike price on exercise day	200	210	220	230	240
Option exercise	No	No	No	Yes	Yes
Outflow (Strike price)	Nil	Nil	Nil	220	220
Out flow (premium)	6	6	6	6	6
Total Outflow	6	6	6	226	226

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Less inflow (Sales proceeds)	-	-	-	230	240
Net payoff	-6	-6	-6	4	14

Net payoff for the holder of the put option (Rs.)

Strike price on exercise day	200	210	220	230	240
Option exercise	Yes	Yes	No	No	No
Inflow (strike price)	220	220	Nil	Nil	Nil
Less outflow (purchase price)	200	210	-	-	-
Less outflow (premium)	5	5	5	5	5
Net Payoff	15	5	-5	-5	-5

The loss of the option holder is restricted to the amount of premium paid. The profit (positive payoff) depends on the difference between the strike price and the share price on the exercise day.

- (b) Calculation of monthly return on the mutual funds:

$$r = \frac{(\text{NAV}_t - \text{NAV}_{t-1}) + I_t + G_t}{\text{NAV}_{t-1}}$$

$$\text{Or, } r = \frac{(\text{Rs.16.08} - \text{Rs.16.00}) + (\text{Rs.0.04} + \text{Rs.0.03})}{16}$$

$$= \frac{0.08 + 0.07}{16} = 0.009375$$

or, $r = 0.9375\%$ or 11.25% p.a

- (c) Debt securitization: - It is a financial market process by which individual/Retail debts are pooled and restructured into a security instrument. Such restructured instrument assumes appropriate personality to be recognized in a larger market, bought and sold freely.

Essentially, there are three phases in a securitization process:

- (i) The Origination phase: In this phase, a borrower seeks a loan from a financial institution. The latter assesses the credit worthiness of the borrower, determines the terms and conditions and extends the loans.
- (ii) The pooling phase: Many small loans are pooled together to create an underlying pool of receivables/assets.
- (iii) The securitization phase: The pooled assets are often transferred to a special purpose vehicle (SPV) which structures the market security based on the underlying

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pool. The SPV issues pass through securities or some other types of securities to beneficiaries (Retail Investors), usually, SPV takes the form of a trust.

Securitisation helps to reduce the cost of capital and improves recycling of funds.

Question 5

- (a) The following 2-way quotes appear in the foreign exchange market:

	Spot	2-months forward
RS/US \$	Rs.46.00/Rs.46.25	Rs.47.00/Rs.47.50

Required:

- (i) How many US dollars should a firm sell to get Rs.25 lakhs after 2 months?
 - (ii) How many Rupees is the firm required to pay to obtain US \$ 2,00,000 in the spot market?
 - (iii) Assume the firm has US \$ 69,000 in current account earning no interest. ROI on Rupee investment is 10% p.a. Should the firm encash the US \$ now or 2 months later? (6 Marks)
- (b) X & Co. is contemplating whether to replace an existing machine or to spend money in overhauling it. X & Co. currently pays no taxes. The replacement machine costs Rs. 95,000 and requires maintenance of Rs.10,000 every year at the year end for eight years. At the end of eight years, it would have a salvage value of Rs.25,000 and would be sold. The existing machine requires increasing amounts of maintenance each year and its salvage value falls each year as follows:

Year	Maintenance (Rs.)	Salvage (Rs.)
Present	0	40,000
1	10,000	25,000
2	20,000	15,000
3	30,000	10,000
4	40,000	0

The opportunity cost of capital for X & Co. is 15%. You are required to state, when should the firm replace the machine:

(Given : Present value of an annuity of Re. 1 per period for 8 years at interest rate of 15% - 4.4873; present value of Re.1.00 to be received after 8 years at interest rate of 15% - 0.3269) (10 Marks)

- (c) According to the position taken by Miller and Modigliani, dividend decision does not influence value. Please state briefly any two reasons, why companies should declare dividend and not ignore it. (4 Marks)

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Answer

- (a) (i) US \$ required to get Rs. 25 lakhs after 2 months at the Rate of Rs. 47/\$

$$\therefore \frac{\text{RS.}25,00,000}{\text{Rs.}47} = \text{US \$ } 53191.489$$

- (ii) Rs. required to get US\$ 2,00,000 now at the rate of Rs. 46.25/\$

$$\therefore \text{US \$ } 200,000 \times \text{Rs.}46.25 = \text{Rs.}92,50,000$$

- (iii) Encashing US \$ 69000 : now Vs 2 month later

Proceed if we can encash in open mkt \$ 69000 × Rs.46 = Rs. 31,74,000

Opportunity gain

$$= 31,74,000 \times \frac{10}{100} \times \frac{2}{12} \quad \text{Rs. } 52,900$$

Likely sum at end of 2 months 32,26,900

Proceeds if we can encash by forward rate :

$$\text{\$ } 69000 \times \text{Rs.}47.00 \quad \text{32,43,000}$$

It is better to encash the proceeds after 2 months and get opportunity gain.

- (b) X & Co. -Equivalent cost of new machine

	Rs.
Cost of New Machine at present	95,000
Add: PV of annual repairs @ Rs.10,000 per	
Annum for 8 years (Rs.10,000 × 4.4873)	<u>44,873</u>
	1,39,873
Less: PV of salvage value at the end	
of 8 th year (Rs.25,000 × 0.3269)	<u>8,173</u>
	<u>1,31,700</u>

Equivalent annual cost (EAC) – Rs.1,31,700/4.4873 = Rs 29,350

Equivalent Annual Cost (EAC) of keeping the machine				
	I year (Rs.)	II Years (Rs.)	III Year (Rs.)	IV Year (Rs.)
Salvage value	40,000	25,000	15,000	10,000
Add: PV of Annual Maintenance (AM/1.15)	8,696	17,391	26,087	34,783

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Total	48,696	42,391	41,087	44,783
Less: PV of salvage				
Values at end of the year (S.V/1.15)	21,739	13,043	8,696	Nil
	26,957	29,348	32,391	44,783
×	1.15	1.15	1.15	1.15
Equivalent Annual cost	31,000	33,750	37,250	51,500

Recommendation:-

The firm should replace the old machine immediately because the equivalent annual cost (EAC) of the new machine at Rs.29,350 is lower than the cost of using the existing machine in all the years, i.e. first year, second year, third and fourth year .

- (c) The position taken by M & M regarding dividend does not take into account certain practical realities is the market place. Companies are compelled to declare annual cash dividends for reasons cited below:-
- (i) Shareholders expect annual reward for their investment as they require cash for meeting needs of personal consumption.
 - (ii) Tax considerations sometimes may be relevant. For example, dividend might be tax free receipt, whereas some part of capital gains may be taxable.
 - (iii) Other forms of investment such as bank deposits, bonds etc, fetch cash returns periodically, investors will shun companies which do not pay appropriate dividend.
 - (iv) In certain situations, there could be penalties for non-declaration of dividend, e.g. tax on undistributed profits of certain companies.

Question 6

- (a) What is sensitivity analysis in Capital budgeting? (6 Marks)

- (b) Z Co. Ltd. issued commercial paper worth Rs.10 crores as per following details:

Date of issue : 16th January, 2009

Date of maturity: 17th April, 2009

No. of days : 91

Interest rate 12.04% p.a

What was the net amount received by the company on issue of CP? (Charges of intermediary may be ignored) (4 Marks)

- (c) Explain briefly the advantages of investing in mutual funds. (5 Marks)
- (d) Write a brief note on the Small Industries Development Bank of India. (5 Marks)

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Answer

- (a) Sensitivity analysis in capital budgeting: Sensitivity analysis is used in capital budgeting for measuring the risk more precisely future being always uncertain and estimations are always subject to error, sensitivity analysis takes care of estimation errors by using a number of possible outcomes in evaluating a project. The methodology adopted here is to evaluate a project by using a number of estimated cash flows so as to provide to the decision maker an insight into the variability of outcome. Thus, it is a technique of risk analysis which studies the responsive of NPV or IRR to variation in underlying factors like selling price, quantity sold, return from an investment etc.

However, it should not be viewed as the method to remove the risk or uncertainty, it is only a tool to analyse and measure the risk and uncertainty. In terms of capital budgeting the possible cash flows are based on three assumptions (namely):-

- (a) Cash flows may be worst (Pessimistic).
- (b) Cash flows may be most likely,
- (c) Cash flows may be most optimistic.

Sensitivity analysis involves following three steps:-

- (i) Identification of all the variables.
- (ii) Definition of the underlying quantitative relationship among the variables, and
- (iii) Analysis of the impact of the changes in each of the variables on the NPV of the project.

- (b) The company had issued commercial paper worth Rs.10 crores

No. of days Involves = 91 days

Interest rate applicable = 12.04 % p.a.

Interest for 91 days = $12.04\% \times \frac{91\text{days}}{365\text{days}} = 3.001\%$

= or Rs. 10 crores $\times \frac{3.001}{100 + 3.001} = \text{Rs.} 29,13,563$
or Rs. 29.1356 Lakhs

∴ Net amount received at the time of issue:-

Rs.10.00 Crores – 0.2913 Crore = Rs.9.7087 Crore

- (c) The advantages of investing in mutual funds are as under:

1. Professional Management

Investors can avail of the services of experienced and skilled professionals, backed by a dedicated investment research team that analyses performance and prospects of companies to select suitable investments.

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2. Diversification

Mutual funds invest in a number of companies across a broad cross section of industries and sectors. Investors achieve this diversification with far less money and risk they could do on their own.

3. Return potential

Over a medium to long term, mutual funds have the potential to provide a higher return as the investments are diversified.

4. Low costs

Mutual funds are a less expensive way to invest as compared with direct investment in the capital market.

5. Liquidity

In open-ended schemes, investors get money promptly at NAV from the mutual fund itself.

In close-ended schemes, investors can sell units on a stock exchange at the prevailing market price or avail of direct repurchase at NAV-related prices which some such schemes offer periodically.

6. Transparency

Investors get regular information on the value of their investments.

(d) Small Industries Development Bank of India (SIDBI)

The small industries Bank of India (SIDBI) was set up in the 1980 by industrial development bank of India (IDBI) to give special funding focus to small scale units. Besides normal fixed capital and working capital funding schemes, SIDBI makes available financial assistance under technology development and modernization, ISO9000 series certification schemes etc. Like NABARD in the area of agricultural finance, SIDBI functions as a re-financing institution operating special funds sanctioned by Government.

SIDBI participates in venture capital funds set up by public sector institutions dedicated to financing of small scale units.

SIDBI schemes for working capital financing of SSI through the re-financing route are very popular.