

**CAP-III, Advanced Financial Management, June 2012**

**Suggested Answer**

**Roll No.....**

**Maximum Marks – 100**

**Total No. of Questions - 6**

**Total No. of Printed Pages – 6**

**Time Allowed - 3 Hours**

**Marks**

**Question No. 1 is compulsory and choose ANY FOUR out of the remaining questions. Working notes should form part of the answers. Make assumptions wherever necessary.**

1.

- a) A firm is considering to install either of the two machines X or Y which are mutually exclusive. The detail of their purchase price and operating costs are as follows:

Year		Machine X	Machine Y
0	Purchase cost	10,000	8,000
1	Operating costs	2,000	2,500
2		2,000	2,500
3		2,000	2,500
4		2,500	3,800
5		2,500	3,800
6		2,500	3,800
7		3,000	
8		3,000	
9		3,000	
10		3,000	

Machine X will recover a salvage value of Rs. 1,500 in the year 10, while machine Y will recover Rs. 1,000 in the year 6. Determine which is cheaper at the 10% cost of capital, assuming that both the machines operate at the same efficiency?

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Capital recovery factor-10%.

Annuity of Re. 1 at the end of:

6 years	4.3553	
10 years	6.1446	
For 6 years		0.2296
For 10 years		0.1628

- b) What are the key stages generally followed in capital budgeting process?

**5**

(2)

**Answer No. 1**

a)

Statement showing the calculations of equivalent annual cost

Machine X

Year		Rs	PV Factor @ 10%	PV of costs
0	Purchase cost	10,000	1.000	10,000.0
1	Operating Costs	2,000	0.909	1,818.0
2		2,000	0.826	1,652.0
3		2,000	0.751	1,502.0
4		2,500	0.683	1,707.5
5		2,500	0.621	1,552.5
6		2,500	0.564	1,410.0
7		3,000	0.513	1,539.0
8		3,000	0.467	1,401.0
9		3,000	0.424	1,272.0
10		3,000	0.386	1,158.0
	Total costs			25,012.0
	Less: Salvage value Rs1500 × 0.386			579.0
				24,433.0
	Divided by annuity PV factor for 10% corresponding to the life of the project (capital recovery factor)			÷6.1446
	Equivalent annual cost			3,976.5

Machine Y

Year		Rs	PV Factor @ 10%	PV of costs
0	Purchase cost	8,000	1.000	8,000.0
1	Operating Costs	2,500	0.909	2,272.5
2		2,500	0.826	2,065.0
3		2,500	0.751	1,877.5
4		3,800	0.683	2,595.4
5		3,800	0.621	2,359.8
6		3,800	0.564	2,143.2
	Total costs			21,313.40
	Less: Salvage value Rs1,000 × 0.564			564.0
				20,749.4
	Divided by annuity PV factor for 10% corresponding to the life of the project (capital recovery factor)			÷4.3553
	Equivalent annual cost			4,764.20

Decision: Machine X would be cheaper to buy.

b)

Answer:

Although the exact procedures vary from case to case, generally followed key stages in capital budgeting process would be as below:

- i) The proposals for capital expenditure originate from an appraisal of the market potential/ product competitiveness/ profitability.
- ii) A detailed scrutiny of the proposal is made and a feasibility report including the alternatives of the project, if any, is prepared,

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- iii) Economic viability is ascertained and estimates of time, cost and earnings are made.
- iv) Financial acceptability including the appraisal of critical factors affecting the profit is then tested.
- v) If necessary, government approval is sought and a license acquired.
- vi) Finally, as the project is put through, it is constantly reviewed and necessary control measures are adopted.

2.

- a) Mr. Shrestha, the finance advisor of M/s Alpine Industries, is confronted with two alternative financial plans for raising Rs. 1,000,000 that is needed for plant expansion and modernization. One choice is 12% debt issue. The other is to issue 8,000 equity shares at the current market price of Rs. 125 per share. The modernization and expansion program is expected to increase the firm's operating profits (EBIT) by Rs. 200,000 annually. The firm's condensed financial statements for current year are given below:

Balance Sheet as on 31 December, current year

Amount (Rs.)		Amount (Rs.)	
Current Liabilities	500,000	Current assets	1,600,000
10% long term loan	1,500,000	Plant and Equipment (net)	3,400,000
Reserves and surpluses	1,000,000		
Equity capital of shares of Rs. 100 each	2,000,000		
	5,000,000		5,000,000

Income statement for the current year

	Amount (Rs.)
Operating profit	800,000
Less: Interest expenses (10% of Rs. 1,500,000)	150,000
Income before taxes	650,000
Less: Income taxes	325,000
Net Income	325,000
Earnings per share	16.25
Dividend per share	8.125

Mr. Shrestha is concerned about the effect that issuing debt might have on the firm. The average debt ratio for firms in industry is 45%. He believes that if this ratio is exceeded, the price earnings ratio will fall to 7 because of the potentially greater risk. If the firm increases its equity capital, he expects the price-earnings ratio to increase to 8.5. He also wonders what will happen to the dividend yield under each plan. The firm follows the practice of paying dividends equal to 50% of net income.

- i) Determine the debt ratio, under each financing plan, after the securities are issued. 3
- ii) Determine the expected net income in the next year, expected earnings per share and the expected market price of the equity shares. 6
- iii) Determine the dividend yield. 2
- iv) Which form of financing should be employed by the company, if the company is to follow a policy of maximizing market value of its shares? 1

(4)

- b) Assuming no taxes and given the earnings before interest and taxes (EBIT), interest at 10% and equity capitalization rate  $K_e$  as below, calculate the total market value of each firm:

Firms	EBIT (Rs.)	Interest (Rs.)	$K_e$
A	200,000	20,000	12.%
B	300,000	60,000	16.%
C	500,000	200,000	15.%
D	600,000	240,000	18%

Also, determine the weighted average cost of capital of each firm.

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**Answer No. 2**

a)

- i) Debt Ratios

	In case of 12% Debt issue Rs	In case of equity issue Rs
Total Debt	$(500,000+1,500,000+1,000,000) = 3,000,000$	$(500,000+1,500,000) = 2,000,000$
Total Assets	6,000,000	6,000,000
Debt ratio (Debt/ Total Assets)	50%	33.33%

- ii) Expected net income

	Rs	Rs
Current operating profit	800,000	800,000
Additional profit	200,000	200,000
Total operating profit	1,000,000	1,000,000
Less: interest	270,000	150,000
Profit before taxes	730,000	850,000
Less taxes @ 50%	365,000	425,000
Profit after taxes	365,000	425,000

Earnings per share		
Outstanding shares (N)	20,000	28,000
EPS (NI ÷ N)	18.25	15.178

Expected market price		
Expected P/E ratio	7.0	8.5
Expected market price (EPS × P/E ratio)	127.75	129.01

- iii) Dividend yield

Dividend per share (50% of earning per share)	9.125	7.589
Dividend yield (Dividend ÷ Market price per share)	7.14%	5.88%

- iv) The company should use the equity financing plan to maximize market value of its shares.

(5)

b)

Answer:

Determination of  $K_0$  and V of firms

	A	B	C	D
	Rs	Rs	Rs	Rs
EBIT	200,000	300,000	500,000	600,000
Less: Interest	20,000	60,000	200,000	240,000
NI for equity holders	180,000	240,000	300,000	360,000
Equity capitalization rate	0.12	0.16	0.15	0.18
Market value of equity	1,500,000	1,500,000	2,000,000	2,000,000
Market value of debt(Int./0.10)	200,000	600,000	2,000,000	2,400,000
Total value of firms	1,700,000	2,100,000	4,000,000	4,400,000
Weighted average cost of capital (EBIT/ V)	11.76%	14.29%	12.50%	13.64%

3.

- a) Kathmandu based Bank K is studying the possible acquisition of Birgunj based Bank B by way of merger. The following data are available:

Bank	After tax earnings	No of equity shares	Market price per share
K	Rs. 1,000,000	200,000	Rs. 75
B	Rs. 300,000	50,000	Rs. 60

- i) If the merger goes through by exchange of equity shares and the exchange ratio is set according to the current market prices, what is the new earning per share for Bank K? 5
- ii) Bank B wants to be sure that its earning per share is not diminished by the merger, what exchange ratio is relevant to achieve the objective? 5
- b) The spot and 360-day forward rates on the Swiss franc are SF 2.1 and SF 1.9 respectively. The risk-free interest rate in the United States is 6 percent and the risk-free rate in Switzerland is 4 percent. Is there an arbitrage opportunity here? How would you exploit it? Illustrate with example. (5+5=10)

**Answer No. 3**

a)

- i) If the current market price is the basis of exchange of equity shares, shareholders of Bank B will get :

$$50,000 \times 60/75 = 40,000 \text{ shares.}$$

In other words, shareholders of Bank B will get 4 shares of Bank K for every 5 shares held by them in Bank B.

The total number of shares in Bank K will then be 240,000 and ignoring any synergistic effect, the profit will be 1,300,000 and the new EPS will be  $1,300,000/240,000 = \text{Rs}5.42$ .

- ii) The present EPS of Bank B is Rs6 and that of bank K is Rs5. If Bank B wants to ensure that, even after merger, the EPS of its shareholders should remain unaffected, then the exchange ratio should be 6 shares for every 5 shares held. As

(6)

such, shareholders of Bank B will get in all 60,000 shares for 50,000 shares. After merger, their EPS will be Rs5 i.e.(1,300,000/260,000). However, in totality, they will get Rs300,000 i.e.(60,000 x5) as before.

b)

Answer:

Based on the interest rate parity, the forward rate should be (approximately):

$$\begin{aligned} F_1 &= S_0 \times [1 + (R_{FC} - R_{US})] \\ &= 2.1 \times [1 + (0.04 - 0.06)] \\ &= 2.06 \end{aligned}$$

Because the forward rate is actually SF1.9, there is an arbitrage opportunity.

To exploit the arbitrage opportunity, it is to be noted that dollars are selling for SF 1.9 each in the forward market. Based on IRP, this is too cheap because they should be selling for SF2.06 each. So arrangements should be made to buy dollars with Swiss francs in the forward market. To do this,

- i) Today: borrow, say, \$1 million for 360 days. Convert it to SF2.1 million in the spot market and buy a forward contract at SF1.9 to convert it back to dollars in 360 days. Invest the SF2.1 million at 4 percent.
- ii) In one year: Investment has grown up to SF2.1 million  $\times$  1.04 = SF 2.184 million. Convert this to dollars at the rate of SF 1.9 = \$1. It will be \$1,149,474. (i.e.SF2.184million /1.9). Pay off loan with 6 percent interest at a cost of \$1 million  $\times$  1.06 = \$1,060,000 and net profit will be difference of \$89,474.

4. An established company is contemplating to issue 10 % debentures to raise funds for financing its ambitious expansion project. The funds Rs. 1,00,000 to be raised for the purpose will be paid off in 5 equal yearly installments payable at the year end along with interest. The processing expenses are estimated to be 10% of the face value of the debentures.

You are required to find out such a rate of return on investment as is sufficient to pay off the interest and principal due for payment every year. Ignore taxes.

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**Answer No. 4**

	<u>Rs</u>
Face value of Debentures	100,000
Less Processing expenses @ 10%	<u>10,000</u>
Initial Cash Inflow on issue of 10% Debentures	<u>90,000</u>

Redemption of debentures in 5 equal yearly installments of Rs 20,000 (i.e., Rs 100,000 / 5 years)

**Yearly Cash Outflows**

Year	Principal a	Interest b	Yearly Outflow a+b
1	20,000	$100,000 \times 10/100$ = 10,000	30,000
2	20,000	$80,000 \times 10/100$ = 8,000	28,000
3	20,000	$60,000 \times 10/100$ = 6,000	26,000
4	20,000	$40,000 \times 10/100$ = 4,000	24,000
5	20,000	$20,000 \times 10/100$ = 2,000	22,000
<b>Total Cash Outflow</b>			<b>130,000</b>

Factor to be located=

Initial cash inflow/Average Cash Outflow

$$= \frac{90,000}{(130,000/5)} = 3.4615$$

The factor thus calculated (i.e., 3.4615) will be located in the present value table of Re 1 received annually for 5 years would give the expected rate of interest at the rate of 14% which can be used for calculation of IRR

Calculation of IRR

Year	Amount(Rs)	DCF@14%	PV(Rs)	DCF@15%	PV(Rs)
1	30,000	0.877	26,316	0.870	26,087
2	28,000	0.769	21,545	0.756	21,172
3	26,000	0.675	17,549	0.658	17,095
4	24,000	0.592	14,210	0.572	13,722
5	22,000	0.519	11,426	0.497	10,938
			<u>91,046</u>		<u>89,014</u>

$$\text{Therefore, IRR} = 14\% + \frac{(91,046 - 90,000)}{(91,046 - 89,014)} \times 1$$

$$\text{IRR} = 14\% + \frac{1046}{1046}$$

$$\text{IRR} = 14\% + 0.51$$

$$\text{IRR} = 14\% + 0.51$$

$$\text{IRR} = 14.51\%$$

**DFV**

**P.T.O.**

5. Water n Hydro (WH) has decided to acquire a new tripper truck. One alternative is to lease the truck on a 4 year contract for a lease payment of \$10,000 per year, with payments to be made at the beginning of each year. The lease would include maintenance.

Alternatively, WH could purchase the truck outright for \$40,000, financing with a bank loan for the net purchase price, amortized over a 4 year period at an interest rate of 10 percent per year, payments to be made at the end of each year. Under the borrow-to-purchase arrangement, WH would have to maintain the truck at a cost of \$1,000 per year, payable at year end. The truck falls into the Modified Accelerated Cost Recovery System (MACRS) with depreciation allowance rate being 0.33, 0.45, 0.15 and 0.07 for year 1 to 4 respectively. It has a salvage value of \$10,000, which is the expected market value after 4 years, at which time WH plans to replace the truck irrespective of whether it leases or buys. WH has a marginal tax rate of 40 percent and it uses its after tax cost of debt as discounting rate.

- a) What is WH's PV of cost of leasing? 5
- b) What is WH's PV of cost of owning? Should the truck be leased or purchased? 5
- c) The appropriate discount rate for use in WH's analysis is the firm's after tax cost of debt. Why? 5
- d) The salvage value is the least certain cash flow in the analysis. How might WH incorporate the higher riskiness of this cash flow into the analysis? 5

(Examinees are supposed to calculate needed PVs by themselves)

**Answer No. 5**

- a) PV cost of leasing:

	Beginning of the year			
	0	1	2	3
Lease Payment (After tax) \$	6,000	6,000	6,000	6,000
PVIF (6%)	1.000	0.9434	0.8900	0.8396
PV of leasing \$	6,000	5,660	5,340	5,038
Total PV cost of leasing \$	22,038			

- b) Cost of owning:

	End of the year				
	0	1	2	3	4
<b>Depreciation Schedule</b>					
Depreciable basis \$	40,000	40,000	40,000	40,000	40,000
Allowances		0.33	0.45	0.15	0.07
Depreciation \$		13,200	18,000	6,000	2,800
<b>Cash Outflows</b>					
Net purchase price \$	(40,000)				
Depreciation tax saving \$		5,280	7,200	2,400	1,120
Maintenance (after tax) \$		(600)	(600)	(600)	(600)



(9)

Salvage value (after tax) \$					6,000
Total cash outflows \$	(40,000)	4,680	6,600	1,800	6,520
PVIF	1.000	0.9434	0.8900	0.8396	0.7921
PV of owning \$	(40,000)	4,415	5,874	1,511	5,164
Total PV cost of owning \$			23,036		

Because the present value of the cost of leasing is less than that of owning, the truck should be leased and under this option, there will be net advantage of \$998 i.e. (\$23,036 - \$22,038).

- c) The discount rate is based on the cost of debt because most of cash flows are fixed by contract and, consequently, are relatively certain. Thus, the lease cash flows have about the same risk as the firm's debt. Also, leasing is considered to be a substitute for debt. Because the cash flows are stated net of taxes, after tax cost rate are used in the solution.
- d) WH could increase the discount rate on the salvage value cash flow. This would increase the PV cost of owning and make leasing even more advantageous.

6. Write short notes on:

(5×4=20)

- a) Role of technique of 'Delegation' in promoting financial system
- b) Key factors molding the evolution of banking structure
- c) Impacts of Share buyback decision and its drawbacks
- d) Loan syndication
- e) Multiple discriminant analysis

**Answer no. 6**

- a) Delegation is one of the basic techniques involved in financial system. When a depositor delegates to a bank or some other intermediary the work of making a loan, it bears the promotional impact on the financial system especially because of following underlying reasons:
- a) Delegation reduces transaction costs. - The delegate can do the work once for all of them, rather than each having to do the work independently.
  - b) Delegation allows specialization. The delegate representing many lenders and lending often, acquires experiences and know how.
  - c) Because lending is concentrated in delegate's hand he can negotiate in better terms.
  - d) Revealing information to a single delegate may be more acceptable to the borrower than a more general disclosure to the public at large.
- b) Three key factors molding the evolution of banking structure are:
- a) Economies of Scale – Banks and other financial intermediaries enjoy considerable economies of scale. One reason is that pooling works better as the pool becomes larger. Another reason is rising of fixed cost less than proportionately with the size

of the bank. Still another reason is reputation i.e., large banks are able to operate at lower cost than small ones.

- b) The technology of communications – In the earlier period, poor communications made control and coordination difficult and the absence of systematic accounting procedures made it hard to monitor performance. However, the situation is drastically changed nowadays. Online banking and e-networking have greatly shaped present banking structure.
  - c) Government Regulation – In most countries, legal obstacles made it difficult for banks to expand till mid-19<sup>th</sup> century. The expansion of state banks was limited by the terms of their charters. With the concept of free market economy and liberalization, circumstances changed and regulations became more bankers' friendly and accommodative.
- c) Consequent to buyback of shares, there will be change in the shareholding pattern. This could alter the controlling interest in the company without ensuring compliance with prevalent government regulations for increase in shareholding. The post scenario impact of share buyback would be as follows:
- a) Decreased number of shares in the market.
  - b) Decreased number of shareholders
  - c) Increased debt equity ratio
  - d) Increased earnings per share
  - e) Decrease in cost of capital.
  - f) Change in composition of shareholders
  - g) Administrative cost of buying and extinguishing some of existing shares.
  - h) Expenditure in case of reissuing share certificates.

Drawbacks:

- a) This could enable unscrupulous promoters to use company's money to raise their personal stakes.
  - b) It opens up possibilities for share price manipulation.
  - c) It could divert away the company's funds from productive investments.
  - d) Evidence shows that post buyback situation results in company's good earnings and share price performance, in which only the remaining shareholders can benefit.
  - e) Evidence shows that repurchases are initiated only when the stocks are under priced and not when the stocks perform better.
  - f) The gain for the stakeholders depends on the type of repurchase.
  - g) In the open market route the investors may not gain at all due to competitive sellers.
  - h) If the company chooses the negotiated deal, the small investors may not have chance to liquidate.
  - i) Investors may be at a loss, if few promoters also participate in the tender offer route because of the proportionate acceptance.
- d) Loan syndication refers to the services rendered by the financial service expert or firm in procurement of term loans and working capital facilities from financial institutions, banks and other financing and investment firms for its clients. These services are rendered by the merchant bankers, financial and management consultants etc. The service is rendered

on fee base and generally as a percentage on the loan amount syndicated. These services are rendered for both existing companies as well as new projects. This will save the time of the management and the promoters in raising necessary finance for the business. The expertise of the syndicators can be used for the advantage of the concern for at a reasonable cost of raising finance.

The major activities involved in syndication of loans consists of the following:

- a) Preparation of project reports and other necessary information with the help of his client.
- b) Scouting for location or identification of source of finance.
- c) Short-listing the providers of funds and preliminary discussion with them about the possibilities of finance and viability of the proposal.
- d) Selection of financial institutions for loan syndication.
- e) Preparation and filing of loan applications with the finance firms which shows interest in financing.
- f) Submission of all necessary information for appraisal of the proposal.
- g) Obtain in principle letter sanctioning the loan.
- h) Getting the loan documentation completed between the lender and the borrower and also help in creation of security for the loan.
- i) Compliance of terms and conditions for availing loan.
- j) Getting disbursement of loan to the client.
- k) Ensure the clients in complying with the terms and conditions as per the loan agreement entered.

The syndicator of loan will charge his client the fee for the services rendered.

- e) It was propounded by Edward Altman, and it combines different indicators of financial performance and solvency position into a single measure of the probability of sickness, failure or insolvency.

Need:

- a) Different factors contribute to the success or failure of a company-Earnings, Turnover, Profit Margin etc.
- b) There are different indicators which reflects the direction in which the company is going-Liquidity Ratios, Turnover Ratios, Profitability Ratios etc.
- c) However, all these are standard alone ratios/factors , and do not provide the appropriate picture on a wholesome basis. An investor is also not sure as to what weightage to be assigned for different factors.

Weights:

MDA considers the following five factors (ratio of different items to the Assets) on a weighted basis to ascertain the Discriminant Score (Bankruptcy Index) of a Firm.

<u>Factor</u>	<u>Notation</u>	<u>Weights</u>
a) Ratio of Net Working Capital to Total Assets	X1	1.20
b) Retained Earnings to Total Assets	X2	1.40
c) Operating Profit(EBIT) to Total Assets	X3	3.30
d) Market Value of Equity to Book Value of Debt	X4	0.60
e) Turnover to Total Assets	X5	0.99

$Z=1.20X_1+1.40X_2+3.30X_3+0.60X_4+0.99X_5$  , Where Z is the overall index. Weights are assigned to different indicators on the basis of their significance from bankruptcy evaluation.

Evaluation:

Evaluation is done based on the Weighted Sum of the above factors and comparing the same to the cut off figures 2.675.

<u>Value of Z</u>	<u>Inference</u>
Greater than 2.675	Financial Sound. Non Bankrupt Region
Less than 2.675	Bankruptcy Region