

Roll No.....

Total No. of Questions—61]

Time Allowed—3 Hours

[Total No. of Printed Pages—8

Maximum Marks—100

GVK

Answers to questions are to be given only in English except in the case of candidates who have opted for Hindi medium. If a candidate who has not opted for Hindi medium, answers in Hindi, his answers in Hindi will not be valued.

Question No. 1 is compulsory. Answer any **four** questions from the rest. Figures in the margin indicate marks allotted to each question.

Working notes should form part of the answer.

Marks 20

1. The Mayfair Rubber Industry Ltd. (MRIL) manufactures small rubber component for the local market. It is presently using 8 machines which were acquired 3 years ago at a cost of Rs. 18 lakh each having a useful life of 8 years with no salvage value. The policy of the company is to depreciate all machines in 5 years. Their production capacity is 37 lakh units while the annual demand is 30 lakh units. The MRIL has received an order from a leading automobile company of Singapore for the supply of 20 lakh rubber bushes at Rs. 15 per unit. The existing machines can be sold @ Rs. 12 lakh per machine.. It is estimated that the removal cost of each machine would be Rs. 60,000. In order to meet the increased demand, the MRIL can acquire 3 new machines at an estimated cost of Rs. 100 lakh each, which will have a combined production capacity of 52 lakh units.

The operating parameters of the existing machines are as follow-

- (i) Labour requirements (Unskilled-18; Skilled- 18; Supervision – 3; and Maintenance-2) and their per month salaries are Rs. 3,500; Rs. 5,500; Rs. 6,500 and Rs. 5,000 each respectively with an increase of 10 per cent to adjust inflation.
- (ii) Raw materials cost, inclusive of wastage is 60 per cent of revenue.
- (iii) Maintenance cost—years 1-5 (Rs. 22.5 lakh), and years 6-8 (Rs. 67.5 lakh).
- (iv) Operating expenses—Rs. 52.10 lakh expected to increase annually by 5 percent.
- (v) Insurance cost/premium—year 1, 2 percent of the original cost of the machine afterwards discounted by 10 percent.
- (vi) Selling Price—Rs. 15 per unit.

The projected operating parameters with the replacement by the machines are as follows :

- (i) Additional working capital—Rs. 50 lakh.
- (ii) Savings in cost of utilities—Rs. 2.5 lakh.
- (iii) Maintenance cost—years 1-2 (Rs. 7.5 lakh); years 3-5(Rs.37.5 lakh).
- (iv) Raw materials cost—55 percent of sales.
- (v) Employee requirement (6 skilled at monthly salary of Rs. 7,000 each and one for maintenance at monthly salary of Rs. 6,500).
- (vi) Laying off cost of 34 workers -(Unskilled-18; skilled-12; Supervisors - 3, and maintenance-1) Rs. 9,21,000, that is equivalent to six month- salary.
- (vii) Insurance cost/premium-2 percent of the Purchase cost of machine in the first year and discounted by 10 percent in subsequent year-.
- (viii) Life of machines— 5 years and salvage value— Rs. 10 lakh per machine.

The company follows straight line method of depreciation and the same is accepted for tax purposes. Corporate tax rate is 35 percent and the cost of capital is 20 percent.

As the Finance Manager of MRIL, prepare a report for submission to the management with your recommendations about the financial viability of the replacement of the existing machines.

Ans:- Working Notes:

1) Statement showing computation of labour per year

(a) Unskilled

Year		Rs.
1	$3500 \times 12 \times 18$	7,56,000
2	$7,56,000 + 10\%$	8,31,600
3	$8,31,600 + 10\%$	9,14,760
4	$9,14,760 + 10\%$	10,06,236
5	$10,06,236 + 10\%$	11,06,860

(b) skilled

Year		Rs.
1	$5500 \times 12 \times 18$	11, 88,000
2	$11, 88,000 + 10\%$	13, 06,800
3	$13, 06,800 + 10\%$	14, 37,480
4	$14, 37,480 + 10\%$	15, 81,228
5	$15, 81,228 + 10\%$	17, 39,351

(c) Supervisor

Year		Rs.
1	$6500 \times 12 \times 3$	2,34,000
2	$2,34,000 + 10\%$	2,57,400
3	$2,57,400 + 10\%$	2,83,140
4	$2,83,140 + 10\%$	3,11,454
5	$3,11,454 + 10\%$	3,42,599

(d) Maintenance

Year		Rs.
1	$5000 \times 12 \times 2$	1,20,000
2	$1,20,000 + 10\%$	1,32,000
3	$1,32,000 + 10\%$	1,45,200
4	$1,45,200 + 10\%$	1,59,720
5	$1,59,720 + 10\%$	1,75,692

2) Statement showing computation of insurance cost for 8 years.

Year			
1	2% of (18×8)	=	2.880
2	$2.88 - 10\%$	=	2.592
3	$2.59 - 10\%$	=	2.33
4	$2.33 - 10\%$	=	2.097
5	$2.097 - 10\%$	=	1.887
6	$1.887 - 10\%$	=	1.6986
7	$1.6986 - 10\%$	=	1.5287
8	$1.5287 - 10\%$	=	1.376

3) Statement showing tax shield on of old existing machine.

$$28.8 \times 35\% = 10.08$$

$$\text{Where depreciation} = \frac{18 \times 8}{5} = 28.8$$

4) Opportunity cost

$$20 \times 15 \times 2.9906 = 897.18$$

5) Computation of Dep. Tax shield on new replaced machine

$$(100 \times 3 - 3 \times 10)$$

$$1) \text{ Depreciation} = \frac{\text{-----}}{5} = 54 \text{ lakhs.}$$

$$2) \text{ Tax shield on depreciation} = 54 \times 2.9906 = 161.49 \text{ lakhs.}$$

6) Statement showing computation of outflow in the year 0 when the machine is replaced.

1) Outflow for purchase

OPTION 1

Statement showing analysis of outflow is existing machine is continued

(Rs. in Lakhs)

Year	1	2	3	4	5
Sales	450	450	450	450	450
(15 x 30)					
(-)cost					
(i) Raw mat.					
(60% of sales)	270	270	270	270	270

(ii) Labour (W.N.1)					
- Unskilled	7.56	8.316	9.1476	10.0624	11.0686
- Skilled	11.88	13.068	14.3748	15.812	17.395
- Super	2.34	2.574	2.8314	3.1145	3.426
- Maintenance	1.20	1.32	1.452	1.5972	1.7569
(iii) Maintenance cost	22.5	22.5	67.5	67.5	67.5
(iv) Operating expense	52.10	54.705	57.44	60.31	63.33
(v) Insurance	2.097	1.887	1.6986	1.5287	1.376
	-----	-----	-----	-----	-----
Cost	80.323	75.63	25.56	20.07	14.15

Year	profit	PAT	Dep.	Cash inflow	DF	PV Fac
1	80.323	52.21	10.08	62.29	0.833	51.89
2	75.63	49.16	10.08	59.24	0.694	41.11
3	25.56	16.61	-	16.61	0.578	9.60
4	20.07	13.04	-	13.04	0.482	6.29
5	14.15	9.20	-	9.20	0.402	3.70
						(897.18)
Opportunity cost						
Projected NPV of existing machine						(784.59)

Option II Statement showing analysis of out flow when new machine is purchased (REPLACEMENT)

	Year 1	Year 2	Year 3	Year 4	Year 5
Sales(50 x 15)	750	750	750	750	750
(-)					
1) Raw material 55%	412.5	412.5	412.5	412.5	412.5
2) Labour					
- Skilled (6 x 7000 x 12)	5.04	5.04	5.04	5.04	5.04
- Maintenance					
3) Insurance cost (2%)	6	5.4	5.29	5.19	5.08
4) Maintenance cost	7.5	7.5	37.5	37.5	37.5

2.(a) BA Ltd. and DA Ltd. both the companies operate in the same industrv. The Financial statements of both the companies for the current financial year are as follows :

Marks 12

Balance Sheet

Particulars	BA Ltd. Rs.	DA Ltd. Rs.
Current Assets	14,00,000	10,00,000
Fixed Assets (Net)	10,00,000	5,00,000
	-----	-----
Total (Rs.)	24,00,000	15,00,000
Equity capital (Rs. 10 each)	10,00,000	8,00,000
Retained earnings	2,00,000	-
14% long-term debt	5,00,000	3,00,000
Current liabilities	7,00,000	4,00,000
	-----	-----
Total (Rs.)	24,00,000	15,00,000
	=====	=====

Income statement

	BA Ltd. Rs.	DA Ltd. Rs.
Net sales	34,50,000	17,00,000
Cost of Goods sold	27,60,000	13,60,000
Gross profit	6,90,000	3,40,000
Operating expenses	2,00,000	1,00,000
Interest	70,000	42,000
Earning before taxes	4,20,000	1,98,000

Taxes @ 50%	2,10,000	99,000
Earning after taxes (EAT)	2,10,000	99,000
Additional information :		
No. of Equity shares	1,00,000	80,000
Dividend payment ratio (D/P)	40%	60%
Market price per share	Rs. 40	Rs.15.

Assume that both companies are in the process of negotiating a merger through an exchange of equity shares. You have been asked to assist in establishing equitable exchange terms and are required to :

(i) Decompose the share price of both the companies into EPS and P/E components; and also segregate their EPS figures into Return on Equity (ROE) and book value/intrinsic value per share components.

(ii) Estimate future EPS growth rates for each company.

(iii) Based on expected operating synergies BA Ltd. estimates that the intrinsic value of DA's equity share would be Rs. 20 per share or. its acquisition. You are required to develop a range of justifiable equity share exchange ratios that can be offered by BA Ltd. to the shareholders of DA Ltd. Based on your analysis in part (i) and (ii), would you expect the negotiated terms to be closer to the upper, or the lower exchange ratio limits and why ?

(iv) Calculate the post-merger EPS based on an exchange ratio of 0.4 : 1 being offered by BA Ltd. Indicate the immediate EPS accretion or dilution. if any, that will occur for each group of shareholders.

(v) Based on a 0.4 : 1 exchange ratio and assuming that BA Ltd.'s pre-merger P/E ratio will continue after the merger, estimate the post-merger market price. Also show the resulting accretion or dilution in pre-merger market prices.

T Ltd. has promoted an open-ended equity oriented scheme in pre-merger market prices.

Ans. Statement showing computation of

	BA Ltd.	DA Ltd.
(i) EPS and P/E ratio		
(a) Earning after tax	2,10,000	99,000
(b) No. of equity share	1,00,000	80,000
(c) EPS (a/b)	2.1	1.2375
(d) Market price	Rs. 40	Rs. 15
(e) P/E ratio (d/c)	19.05 times	12.12 times
(f) Return on equity		
Earning before interest and taxes.	4,90,000	2,40,000
Equity	1,00,000	8,00,000
Retained earning	2,00,000	-
	-----	-----
	12,00,000	8,00,000
ROE =	$\frac{4,90,000}{12,00,000} \times 100$	$\frac{2,40,000}{8,00,000} \times 100$
	= 40.833%	= 30%
(g) Intrinsic value of shares		
Assets	24,00,000	15,00,000
(-) 14% long term debt	5,00,000	3,00,000
(-) Current liabilities	7,00,000	4,00,000
	-----	-----
	12,00,000	8,00,000
No. of shares	1,00,000	80,000
Intrinsic value	Rs.12	Rs.10
(ii) Future growth rate		
Where growth rate = Retention ratio x ROE		
	= 0.60 X 40.833	= 0.4 X 30
	= 24.20	= 12
(iii) Given Estimate		
Equity Share	12	20

Exchange ratio = $\frac{5}{3}$

i.e for 3 share of DA std is equivalent to for every 5 share of BA Ltd.

Expectation based On (i) &(ii) $\frac{12}{5}$ $\frac{10}{6}$
Equity share exchange ratio

For every 6 shares of DA Ltd, BA Ltd will issue 5 shares so the terms are

(iv) Exchange ratio = 0.4 : 1 i.e for each share of DA Ltd. ,BA Ltd will issue 0.4 shares

No. of shares issued = $80,000 \times \frac{0.4}{1} = 32,000$ shares

Post merger EPS = $\frac{2,10,000 + 99,000}{32,000 + 1,00,000} = \frac{3,09,000}{1,32,000} = 2.34$

For BA Ltd share holder earlier they used to get 2.1 where as now EPS = Rs. 2.34

There is an accretion; whereas for DA Ltd. They have got 0.4 share of BA Ltd. For every share of their.

Now they must be getting $= (0.4 \times 2.34) = \text{Rs. } 0.936$ as their per share EPS this means their EPS has been diluted.

(v) Computation of post merger market price BA Ltd. P/E 19.05 times

Market price = P/E X EPS
= 19.05×2.34
= Rs. 44.58

	Pre	Post	Effect
BA Ltd.	40	44.58	Accretion
DA Ltd.	15	44.58×0.4 =17.83	Accretion

(b). T Ltd. has promoted an open-ended equity oriented scheme in 1999 with two plans—Dividend Reinvestment Plan (Plan-A) and a Bonus Plan (Plan-B); the face value of the units was Rs. 10 each. X and Y invested Rs. 5,00,000 each on 1.4.2001 respectively in Plan-A and Plan-B, when the NAV was Rs. 42.18 for Plan A and Rs. 35.02 for Plan-B. X and Y both redeemed their units on 31.3.2008. Particular's of dividend and bonus declared on the units over THE period were as follows :

Date	Dividend	Bonus Ratio	NAV Plan A	NAV Plan B
15.9.2001	15	—	46.45	29.10
28.7.2002	—	1 : 6	42.18	30.05
31.3.2003	20	—	48.10	34.95
31.10.2003	—	1 : 8	49.60	36.00
15.3.2004	18	—	52.05	37.00
24.3.2005	—	1 : 11	53.05	38.10
27.3.2006	16	—	54.10	38.40
28.2.2007	12	1 : 12	55.20	39.10
31.3.2008	—	—	50.10	34.10

You are required to calculate the annual return for X and Y after taking into consideration the following information :

- Securities transaction tax @ 2% on redemption,
- Liability of capital gains to income tax
 - Long-term capital gain-exempt; and
 - Short-term capital gains at 10% plus education cess at 3%.

Ans Dividend Reinvestment Plan (Plan A)

1) Dividend received as units (15.09.01)

Market value of units held (Before dividend) on date of purchase = $\text{Rs. } 42.18 \times 11854 = \text{Rs. } 500000$

Tax value of units held (Before dividend) = $10 \times 11854 = 118540$

Dividend = $\text{Rs. } 118540 \times 15\% = \text{Rs. } 17781$

NAV on 15.09.01 = Rs. 46.45

$$\text{Units issued as dividend} = \frac{17781}{46.45} = 383 \text{ units}$$

2) Dividend received as units (31.03.03)

$$\begin{aligned} \text{Tax value of units held (before dividend)} &= 10 \times [11854 + 383] \\ &= 10 \times 12237 \\ &= 122370 \end{aligned}$$

$$\begin{aligned} \text{Dividend} &= 122370 \times 20\% \\ &= \text{Rs.}24474 \end{aligned}$$

$$\text{NAV on 31.3.03} = \text{Rs. } 48.10$$

$$\text{Units issued as dividend} = \frac{24474}{48.10} = 508 \text{ units}$$

3) Dividend received as units on 15.3.04

$$\begin{aligned} \text{Tax value of units held (before dividend)} &= 10 \times [12237 + 508] \\ &= \text{Rs. } 127450 \end{aligned}$$

$$\begin{aligned} \text{Dividend} &= \text{Rs. } 127450 \times 18\% \\ &= \text{Rs. } 22941 \end{aligned}$$

$$\text{NAV on 15.3.04} = \text{Rs. } 52.05$$

$$\text{Units issued as dividend} = \frac{\text{Rs.}22941}{\text{Rs.}52.05} = 440 \text{ units .}$$

Dividend received as units on 27.3.2006

$$\begin{aligned} \text{Tax value of units held (before dividend)} &= 10 \times [12745 + 440] \\ &= \text{Rs. } 131850 \end{aligned}$$

$$\begin{aligned} \text{Dividend} &= \text{Rs. } 131850 \times 16\% \\ &= \text{Rs. } 21096 \end{aligned}$$

$$\text{NAV on 27.3.06} = \text{Rs. } 54.10$$

$$\text{Units issued as dividend} = \frac{\text{Rs. } 21096}{\text{Rs. } 54.10} = 390 \text{ units}$$

Dividend received as units as 28.2.07

$$\begin{aligned} \text{Tax value of units held (before dividend)} &= 10 \times [13185 + 390] \\ &= \text{Rs. } 135750 \end{aligned}$$

$$\begin{aligned} \text{Dividend} &= \text{Rs. } 135750 \times 12\% \\ &= \text{Rs. } 16290 \end{aligned}$$

$$\text{NAV on 28.2.07} = \text{Rs. } 55.20$$

$$\text{Units issued as dividend} = \frac{\text{Rs. } 16290}{\text{Rs. } 55.20} = 295 \text{ units}$$

$$\begin{aligned} \text{Number of units available on 31.3.08} &= 13575 + 295 \\ &= 13870 \text{ units} \end{aligned}$$

$$\begin{aligned} \text{Amount realized on disposal} &= 13870 \times 50.1 \\ &= \text{Rs.}694887 \end{aligned}$$

$$\text{Let average annual growth rate (annually compounded)} = \text{of period of investment} = 1.4.01 - 31.3.08 = 7 \text{ Yrs.}$$

$$\text{Rs. } 500000 (1 + g)^7 = \text{Rs. } 694887$$

$$(1 + g)^7 = 1.3898$$

$$g = 4\% \text{ Ans}$$

Bonus plan (Plan B)

$$\begin{aligned} 1) \text{ No. of units held (Before Bonus) } 1.4.01 &= \frac{500000}{35.02} \\ &= 14277 \text{ units} \end{aligned}$$

$$\begin{aligned}
& 2) \text{ Bonus units received on 28.7.02} = \frac{14277}{6} = 2380 \text{ units} \\
& 3) \text{ No. of units held (Before bonus) 31.10.03} = 14277 + 2380 \\
& \quad = 16657 \text{ units} \\
& 4) \text{ Bonus units received on 31.10.03 on 31.10.03} = \frac{16657}{8} = 2082 \text{ units} \\
& 5) \text{ No. of units held (before Bonus) 24.3.05} = 16657 + 2082 \\
& \quad = 18739 \text{ units} \\
& 6) \text{ Bonus units received on 24.3.05} = \frac{18739}{11} = 1703 \text{ units} \\
& 7) \text{ No. of units held (before bonus) 28.2.07} = 18739 + 1703 \\
& \quad = 20442 \text{ units} \\
& 8) \text{ Bonus units received on 28.2.07} = \frac{20442}{12} = 1704 \\
& 9) \text{ No. of units available on 31.3.08} = 20442 + 1704 \\
& \quad = 22146 \text{ units} \\
& 10) \text{ Amount realized on disposal of 22146 units} = 22146 \times \text{Rs. } 34.10 \\
& \quad = \text{Rs. } 755178.60 \\
& \text{Period of investments} = 7 \text{ years} \\
& 500000 (1 + g)^7 = \text{Rs. } 755178 \\
& \quad g = \mathbf{6\% \text{ Ans.}} \text{ (Using Logarithms in the calculation)}
\end{aligned}$$

3. (a) Sun Ltd. in planning to import an equipment from Japan at a cost of 3,400 6 lakh yen. The company may avail loans at 18 percent per annum with quarterly rests with which it can import the equipment. The company has also an offer from Osaka branch of an India based bank extending credit of 180 days at 2 percent per annum against opening of an irrecoverable letter of credit. 6 Marks

Additional information :

Present exchange rate Rs. 100 = 340 yen

180 day's forward rate Rs. 100 = 345 yen

Commission charges for letter of credit at 2 percent, per 12 months.

Advise the company whether the offer from the foreign branch should be accepted.

Ans:- Option (A) – so finance the purchase by availing loan at 18% per annum (Rs in lakhs)

Cost of machine [3400/340 x 100] =	1000.00
Add: interest at 4.5% for 1 st quarter =	45.00
Add: interest at 4.5% for 2 nd quarter =	47.03
Total outflow =	1092.03

Option (b) so accept offer from foreign branch

(Rs in lakh)

Cost of machine [3400/345 x 100]	985.51
Add: Interest @ 2% for 180 days [985.51 x 2% x 180/365]	9.72
Add: Commission of letter of credit [3400/340 x 100 x 2% x 6/12]	10
Add: Interest on 1 st quarter [10 x 18% x 1/4]	0.45
Add: Interest on 2 nd quarter [10.45 x 18% x 1/4]	0.47

	1006.15
	=====

ADVICE: Option 2 is cheaper so it is acceptable.

(b) Mr. A is interested to invest Rs. 1,00,000 in the securities market. He selected two securities B and D for this purpose. The risk return profile of these securities are as follows : 6 Marks

Security	Risk (σ) E (σ)	Expected Return (ER)
B	10%	12%
D	18%	20%

Co-efficient of correlation between B and D is 0.15.

You are required to calculate the portfolio risk and portfolio return of the following portfolios of B and D to be considered by A for his investment.

- (i) 100 percent investment in B only;
- (ii) 50 percent of the fund invested in B and D both;
- (iii) 75 percent of the fund in B and the rest 25 percent in D;
- (iv) 25 percent of the fund in B and the rest 75 percent in D; and
- (v) 100 percent investment in D only.

Also indicate that which portfolio is best for him from risk as well as return point of view ?

Ans. Statement showing valuation of portfolio risk and portfolio return of the following options.

S. No	Options	Portfolio Return	Portfolio Risk
1.	100% investment in B only	12%	10%
2.	50% in B and D only.	$P_1 X_1 + P_2 X_2 = 0.5 \times 12 + 0.5 \times 20 = 16\%$ $= 0.5 \times 12 + 0.5 \times 20 = 16\%$	$\sqrt{61^2 p_1^2 + 6^2 p_2^2 + 2 p_1 p_2 61 62 r}$ $= \sqrt{1195} = 10.93\%$
3.	75% in B and 25% in D	$= 0.75 \times 12 + 0.25 \times 20 = 14\%$	$= \sqrt{86.625} = 9.31\%$
4.	25% in B and 75% in D	$= 0.25 \times 12 + 0.75 \times 20 = 18\%$	$= \sqrt{198.625}$ $= 14.09$
5.	100 % in D	= 20%	= 18%

Option third is advisable taking risk into consideration option fourth can also workout taking return and risk both.

(c) Write short notes on the following :

4x2=8

- (i) Global Depository Receipts
- (ii) Interest Rate Swaps.

Ans.(i) Global Depository receipts.

(i) A Depository receipts is basically a negotiable instrument, certificate, denomination in us dollars, that represents a non US company's publicly traded local currency (Indian Rupees) Equity share in theory, though a depository receipts can also represent a debt instrument, in practice it rarely does. Depository Receipts is created when a local currency share of an Indian company are delivered to the Depository bank (such as the bank of New York) issue depository receipt in US Dollar. These DR's may trade freely in the overseas market like any other dollar denominated security, either on a foreign stock exchange markets or among a restricted group, such as qualified institutional every. Indian issues have taken the form of GDR's to reflect the fact that they are marketed globally, rather than in a specific country or market.

Ans. (ii) Interest rate swap

With an interest rate swap interest payment obligations are recharged between two parties, but they are denominated in the same currency. The swap can be formed or the future contracts. Term may ascend up to 15 years or more, where as the range for forward on future contracts is upto 5 years. The market for swap is unregulated and began in early 1980's the most common interest rate swap is the floating – Fixed rate exchange for example, a corporate that has borrowed on a fixed rate term basis may swap with a counter party to make floating rate interest payments.

4.(a) XYZ Ltd. requires an equipment costing Rs. 10,00,000; the same will be utilised over a period of 5 years. It has two financing options in this regard :

- (i) Arrangement of a loan of Rs. 10,00,000 at an interest rate of 13 percent per annum; the loan being repayable in 5 equal year end instalments; the equipment can be sold at the end of fifth year for Rs. 1,00,000.
- (ii) Leasing the equipment for a period of five years at an yearly rental of Rs. 3,30,000 payable at the year end.

The rate of depreciation is 15 percent on Written Down Value (WDV) basis, income tax rate is 35 percent and discount rate is 12 percent.

Advise the XYZ Ltd. that which of the financing options is to be exercised and why.

Ans. Option 1 – Borrowing using loan

(a) Working notes

1) Cumulative discounting factor (13% for 5 year) = 3.5172

10 lakhs

2) Equal loan installments = $\frac{10}{3.5172} = 2.84$

3) Analysis of loan installment

(All figures in lakh)				
Year	Installment	Principal payment	Interest payment	Principal o/s
0	-	-	-	10.0000
1	2.84	1.5400	1.3000	8.4600
2	2.84	1.7400	1.1000	6.7200
3	2.84	1.9664	0.8736	4.7536
4	2.84	2.2220	0.6180	2.5316
5	2.84	2.5136	0.3264*	

* Balance figure of last year.

4) Statement showing depreciation tax shield.

Year	Opening WDV	Depreciation @ 15% WDV	Closing WDV	Tax shield
1	10	1.5	8.5	0.525
2	8.5	1.275	7.225	0.446
3	7.225	1.084	6.141	0.379
4	6.141	0.921	5.220	0.322
5	5.220	0.783	4.437	0.274

5) Computation of terminal cash flow.

		Rs in lakh
Salvage Value		1.00
Add: Tax saved on loss on disposal[0.35(4.437 – 1.000)]		<u>1.20</u>
		<u>2.20</u>

Statement showing computation of feasibility of Borrowing option.

Year	1	2	3	4	5
Principal paid	1.54	1.74	1.9664	2.222	2.5136
(+) Post tax intt	0.845	0.715	0.567	0.402	0.2122
	<u>2.385</u>	<u>2.455</u>	<u>2.5344</u>	<u>2.624</u>	<u>2.7258</u>
(-) Dep. tax shield	0.525	0.446	0.379	0.322	0.274
	<u>1.86</u>	<u>2.009</u>	<u>2.1554</u>	<u>2.302</u>	<u>2.4518</u>
(-) Terminal Cash flow	-	-	-	-	2.20
	<u>1.86</u>	<u>2.009</u>	<u>2.1554</u>	<u>2.302</u>	<u>0.2518</u>
Discounting Cash flow	0.922	0.850	0.784	0.723	0.666
D.F (8.45%) (post tax)	1.71	1.70	1.69	1.66	0.168
P.v. of Cashflow					<u>6.93</u>
Total					

Statement showing feasibility of leasing option

(i) P.v of cash outflow	=	3.30(1-0.35)
	=	2.145 Lakhs
(ii) Post Tax cost of debt used as discounting factor.	=	13%(1-0.35)
	=	8.45%
(iii) Cumulative d.f. (from Year 1 to year 5 at 8.45/-)=		3.9458
P.V of cash outflow	=	2.145 x 3.9458
	=	8.46 lakhs

Conclusion

Present value of cash outflow of borrowing option is less than P.V of cash outflow of leasing by 1.53 lakh(8.46 – 6.93), Net disadvantage for leasing = 1.53 lakh Hence borrowing option is recommended.

(b) ABC Ltd. has been maintaining a growth rate of 10 percent in dividends. The company has paid dividend @ Rs. 3 per share. The rate of return on market portfolio is 12 percent and the risk free rate of return in the market has been observed as 8 percent. The Beta co-efficient of company's share is 1.5.

You are required to calculate the expected rate of return on company's shares as per CAPM model and equilibrium price per share by dividend growth model. 6

Ans. Given,

Growth rate(g)	=	10%
Past dividend (Do)	=	Rs. 3
Market return (Rm)	=	12%
Risk free return (Rf)	=	8%
Beta (B)	=	1.5

Using CAPM model

$$\begin{aligned}\text{Expected rate of return on company's share} &= R_f + B(R_M - R_f) \\ &= 8 + 1.5(12 - 8) = 14\%\end{aligned}$$

Equilibrium price

$$\begin{aligned}\text{Per share } P_0 &= \frac{D_1}{K_e - g} = \frac{3(1.10)}{0.14 - 0.10} = \frac{3.3}{0.04} = \text{Rs. } 82.50\end{aligned}$$

(c) What do you mean by 'Financial Engineering' ? State its significance in the present regime of globalization. 6

Ans. Financial engineering – The financial derivatives can be used for speculation but the essential objective of the development of derivatives Instrument is risk management. The science is using various derivative instrument is collectively called financial engineering. The futures and options are used for shorter term risk management the swap are used for longer term risk management.

5. (a) Followings are the spot exchange rates quoted at three different forex markets : 6

USD/INR	48.30 in Mumbai
GBP/INR	77.52 in London
GBP/USD	1.8231 in New York

The arbitrageur has USD 1,00,00,000. Assuming that there are no transaction costs, explain whether there is any arbitrage gain possible from the quoted spot exchange rates.

Ans.5 (a) Spot market rate

- 1) 1 USD = 48.30 INR
- 2) 1 GBP = 77.52 INR
- 3) 1 GBP = 1.6231 IUSD.

Calculate gross currency rate between USD and INR (INR/USD)

$$\begin{aligned}\frac{\text{INR}}{\text{USD}} &= \frac{\text{INR}}{\text{GBP}} \times \frac{\text{GBP}}{\text{USD}} = 77.52 \times \frac{1}{1.6231}\end{aligned}$$

1 USD = 47.76 INR (Gross currency rate)

Arbitrager action

(a) Sell USD 100 lakh and receive INR 4830 lakh.

$$(100 \times 48.30)$$

(b) Sell INR 4830 lakh and buy GBP 62.3065

$$\left[\frac{4830}{77.52} \right]$$

(C) Sell GBP 62.30 650 lakh and buy USD 101.13 lakh.

$$(62.3065 \times 1.6231)$$

Arbitrage gain = 101.13 lakh USD

(-) 100.00 lakh USD

Gain 1.13 lakh.

(b) MSN Ltd. has total sales of Rs. 4.50 crores and its average collection period is 120 days. The past experience indicates that bad debt losses are 2 percent on sales. The expenditure incurred by the company in administering its receivable collection efforts are Rs. 6,00,000. A Factor is prepared to buy the company's receivables by charging 2 percent commission. The factor will pay advance on receivables to the company at an interest rate of 18 per cent per annum after withholding 10 percent as reserve.

You are required to calculate effective cost of factoring to the company.

Ans. (a) Average level of receivable		= 150.00
(b) Factoring commission	$150 \times \frac{2}{100}$	= 3.00
(c) Factoring reserve	$150 \times \frac{10}{100}$	= 15.00
(d) Amount receivable for advance		132.00
	$= 150.00 - (3+15)$	
(e) Factor will deduct his interest @ 18%		
	$132.00 \times 18 \times 120$	
(f) Interest =	$\frac{100 \times 360}{100 \times 360}$	7.92
(G) Advance to be paid =	$132.00 - 7.92$	124.08

Annual cost of factoring to be firm.

Factoring commission	$3 \times \frac{360}{120}$	= 9.00
Interest charges	$7.92 \times \frac{360}{120}$	= 23.76
Total =		32.76
		====

Firm savings on taking factoring services :-

Cost of credit administration saved	6.00
Cost of Bad debts $(450 \times 2 / 100)$	9.00
Total	15.00
	====
Net cost to be firm $[32.76 - 15.00]$	17.76

$$\text{Effective rate of interest to the firm} = \frac{17.76 \times 100}{124.08} = 14.31\%$$

(c) Discuss the main features of green-field Privatization.

6

Ans: Greenfield privatization

This term connotes Government of India's intention to allocate more and more industrial sectors exclusively for private sector. More specifically, Sunrise industries and such other industries that are not highly capital intensive, or social benefit related etc, were sought to be encouraged under private sector, with a parallel effort to reduce budgetary support to existing PSU's.

Government of India selected five different results to go about implementing the process of Greenfield privatization

- (i) Delicensing – Many industries that were exclusively reserved to be taken up in public sector were delicensed; thus opening up opportunities for private sector investment, introducing a spirit of healthy competition.
- (ii) Reducing the budget allocation.
- (iii) Streamlining decision making systems
- (iv) Allowing accessing external aids and grants, particularly for infrastructure related projects, and
- (v) Reduction in anomaly in duty structure.

6. (a) Calculate the price of 3 months PQR futures, if PQR (FV Rs. 10) quotes Rs. 220 on NSE and the three months future quote at Rs. 230 and the one month borrowing rate is given as 15 percent and the expected annual dividend yield is 25 percent per annum payable before expiry. Also examine arbitrage opportunities.

Ans Spot rate of PQR future = 220% on NSE

3 month future price of PQR future = 230/-

$$\text{Borrowing rate for forward period} = \frac{15}{4 \times 25} = 3.75\%$$

$$\text{Yielding rate for forward period} = \frac{4}{4} = 6.25\%$$

From above information we calculate Synthetic forward rate using formula.

$$= \frac{\text{Spot Buying rate} (1 + \text{deposit rate})}{(1 + (\text{Borrowing rate}))} = \frac{220 (1 + .0625)}{(1 + .0375)} = 225.30/-$$

Here synthetic forward rate is lower than 3 month forward rate. Hence arbitrage gain is possible.

Arbitrager Action

(a) Borrow \$ 220 and buy one PQR future.

After 3 month.

Received Rs. 233.75 from PQR future and repay the loan Rs. 228.25 to the lender.

Arbitrage gain = 233.75 (220 x 1.0625)

(-) 228.25 (220 x 1.0375)

5.50 gain
=====

(b) Based on the credit rating of bonds, Mr. Z has decided to apply the following discount rates for valuing bonds :

Credit Rating	Discount Rate
AAA	364 day T bill rate + 3% SPREAD
AA	AAA + 2% spread
A	AAA + 3% spread

He is considering to invest in AA rated. Rs. 1,000 face value bond currently selling at Rs. 1,025.86. The bond has five years to maturity and the coupon rate on the bond is 15% p. a. payable annually. The next interest payment is due one year from today and the bond is redeemable at par. (Assume the 364 day T-bill rate to be 9%).

You are required to calculate the intrinsic value of the bond for Mr. Z. Should he invest in the bond ? Also calculate the current yield and the Yield Maturity (YTM) of the bond.

Ans. 364 days T. Bill rate = 9%

<u>Credit Rating</u>	<u>Discount rate</u>
AAA	9% + 3% = 12%
AA	12% + 2% = 14%
A	12% + 3% = 15%

Mr. 2 is decide to invest Rs, 1000/- in AA rate i.e 14%

Currency market value of bond = 1025.86.

Bond coupon rate = 15% p.a.

Calculation of intrinsic value of bond let D. R = 14%

Year	cash flow	Discounting facture @14%	DCF
1 to 5	150	3.433	514.95
5	1000	.519	519.00

			1033.95

Second D. R assumed 16%

Year	cash flow	Discounting facture @16%	DCF
1 to 5	150	3.274	491.10
5	1000	.476	476.00

			967.10

By using interpolation formula we calculate

$$= 14\% + \frac{1033.95 - 1025.86}{1033.95 - 967.10} \times (16 - 14)$$

$$= 14\% + \frac{8.09}{66.85} \times 2 = 14.24\%$$

Intrinsic value =

Year	cash flow	discounting facture @14%	DCF
1 to 5	150	3.413	511.95
5	1000	.514	514.00

			1025.95

Intrinsic value = 1025.95.

(b) Mr. Z Should he invest in the bond ?

Ans. Current market price is less then the bond intrinsic value, Hence Mr.Z may invest in the bond.

(c) Current yield of the bond =14.24%

(d) YTM = 14.24%

(c) Discuss the Capital Asset Pricing Model (CAPM) and its relevant assumptions.

5

Ans. The CAPM is based on the following assumption.

- The investors objective is to maximize the utility of terminal wealth.
- Investor make choices on the basis of risk and return.
- Investors have homogenous expectations of risk and return.
- Investors have identical time horizon.
- Information is freely and simultaneously available to investors.
- There is a risk free asset and investor can borrow and lend unlimited amount at the risk – free rate.
- There is no taxes, transaction cost, restrictions on short rate, or other market imperfections.
- Total assets quantity is fixed, and all assets are marketable and divisible.

(d) Distinguish between Forward and Futures contract.

5

Ans. Distinguish between forward and future contract.

Forwards

- Forward contract are not standardized contract.
- Margins are generally not payable on such contract.
- One has to really search for a suitable countess

Futures

- Future contract are standardized contract.
- Margins paid are also marked to market price every day.
- The contract trade on a organized future's exchange with

Party to meet one's terms.

4. Each contract is unique in terms of rise, quantity, Price expiration date, Type of assets, etc. So, if there are a variety of assets. Then a number of different contracts have to be entered into.

5. There is no performance guarantee in the forward Contract and hence counter party risk is very great.

clearing house that act as arbiters between the contracting parties.

4. Every future contract is company standardized in terms of: quality of the underlying, Date, month of delivery, units of price quotation and minimum price changes.

5. Both buying and selling party pay margins to the exchange And this amount is used to ensure performance of the contract.