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PAPER – 2 : STRATEGIC FINANCIAL MANAGEMENT

Question No.1 is compulsory.
*Attempt any **five** out of the remaining **six** questions.*
Wherever appropriate, suitable assumptions should be made and indicated in the answer by the candidate.
Working notes should form part of the answer.

Question 1

(a) EFD Ltd. is an export business house. The company prepares invoice in customers' currency. Its debtors of US$. 10,000,000 is due on April 1, 2015.

Market information as at January 1, 2015 is:

Exchange rates US$/INR		***Currency Futures US$/INR***	
Spot	*0.016667*	*Contract size: ₹ 24,816,975*	
1-month forward	*0.016529*	*1-month*	*0.016519*
3-months forward	*0.016129*	*3-month*	*0.016118*

	Initial Margin	***Interest rates in India***
1-Month	*₹ 17,500*	*6.5%*
3-Months	*₹ 22,500*	*7%*

On April 1, 2015 the spot rate US$/INR is 0.016136 and currency future rate is 0.016134.

Which of the following methods would be most advantageous to EFD Ltd?

(i) Using forward contract

(ii) Using currency futures

(iii) Not hedging the currency risk ***(6 Marks)***

(b) TUV Ltd. has invested in three Mutual Fund schemes as per the details given below:

	Scheme X	***Scheme Y***	***Scheme Z***
Date of Investment	*1-10-2014*	*1-1-2015*	*1-3-2015*
Amount of Investment (₹)	*15,00,000*	*7,50,000*	*2,50,000*
Net Asset value at entry date	*₹ 12.50*	*₹ 36.25*	*₹ 27.75*
Dividend received upto March 31, 2015	*₹ 45,000*	*₹ 12,500*	*Nil*
Net Asset value as at March 31, 2015	*₹ 12.25*	*₹ 36.45*	*₹ 27.55*

What will be the effective yield (per annum basis) for each of the above three schemes upto 31st March 2015? ***(4 Marks)***

(c) PQR Ltd. has credit sales of ₹ 165 crores during the financial year 2014-15 and its average collection period is 65 days. The past experience suggests that bad debt losses are 4.28% of credit sales.

Administration cost incurred in collection of its receivables is ₹ 12,35,000 p.a. A factor is prepared to buy the company's receivables by charging 1.95% commission. The factor will pay advance on receivables to the company at an interest rate of 16% p.a. after withholding 15% as reserve.

Estimate the effective cost of factoring to the company assuming 360 days in a year.

(6 Marks)

(d) The following information is collected from the annual reports of J Ltd:

Profit before tax	*₹ 2.50 crore*
Tax rate	*40 percent*
Retention ratio	*40 percent*
Number of outstanding shares	*50,00,000*
Equity capitalization rate	*12 percent*
Rate of return on investment	*15 percent*

What should be the market price per share according to Gordon's model of dividend policy?
(4 Marks)

Answer

(a) Receipts using a forward contract = $10,000,000/0.016129 = ₹ 620,001,240

Receipts using currency futures

The number of contracts needed is ($10,000,000/0.016118)/24,816,975 = 25

Initial margin payable is 25 contracts x ₹ 22,500	=	₹	5,62,500
On April 1,2015 Close at 0.016134			
Receipts = US$10,000,000/0.016136	=	₹	619,732,276
Variation Margin = [(0.016134 – 0.016118) x 25 x 24,816,975/-]/0.016136			
OR (0.000016 x 25 x 24,816,975)/.016136 = 9926.79/0.016136 =		₹	615,195
Less: Interest Cost – ₹ 5,62,500 x 0.07 x 3/12	=	₹	9,844
Net Receipts		₹	620,337,627

Receipts under different methods of hedging

Forward contract	₹	620,001,240
Futures	₹	620,337,627

No hedge (US$ 10,000,000/0.016136) ₹ 619,732,276

The most advantageous option would have been to hedge with futures.

(b) Calculation of effective yield on per annum basis in respect of three mutual fund schemes to TUV Ltd. up to 31-03-2015:

PARTICULARS			MFX	MFY	MFZ
(a)	Investments		₹ 15,00,000	₹ 7,50,000	₹ 2,50,000
(b)	Opening NAV		₹ 12.50	₹ 36.25	₹ 27.75
(c)	No. of units	(a / b)	1,20,000	20,689.66	9,009
(d)	Unit NAV ON 31-3-2015		₹ 12.25	₹ 36.45	₹ 27.55
(e)	Total NAV on 31-3-2015	(c x d)	₹ 14,70,000	₹ 7,54,138	₹ 2,48,198
(f)	Increase / Decrease of NAV	(a – e)	(₹ 30,000)	₹ 4,138	(₹ 1,802)
(g)	Dividend Received		₹ 45,000	₹ 12,500	Nil
(h)	Total yield	(f + g)	₹ 15,000	₹ 16,638	(₹ 1,802)
(i)	Number of Days		182	90	31
(j)	Effective yield p.a.	(h/a x 365/i x 100)	2.00%	9.00%	(-) 8.49%

(c)

Particulars	₹crore
Average level of Receivables = 165 crore× 65/360	29.7916
Factoring commission = 29.7916crore×1.95/100	0.5809
Factoring reserve = 29.7916crore× 15/100	4.4687
Amount available for advance = ₹ 29.7916 – (0.5809 + 4.4687)	24.742
Factor will deduct his interest @ 16%:-	
$24.742 \times \frac{16}{100} \times \frac{65}{360}$	₹ 0.7148
Advance to be paid = (₹ 24.742–₹ 0.7148)	24.0272

Annual Cost of Factoring to the Firm: ₹crore

Factoring commission (₹ 0.5809 crore× 360/65)	3.2173
Interest charges (₹ 0.7148 crore× 360/65)	3.9589
Total	7.1760
Firm's Savings on taking Factoring Service:	₹
Cost of credit administration saved	0.1235

Cost of Bad Debts (₹ 165 crore× 4.28/100) avoided	7.0620
Total	7.1855
Net cost to the Firm (₹ 7.1760 – ₹ 7.1855)	-0.0095
Effective cost of factoring to the firm = $\frac{-0.0095 \times 100}{24.0272}$	-0.0395%

(d) Gordon's Formula

$P_0 = \frac{E(1-b)}{K-br}$

P_0 = Market price per share

E = Earnings per share (₹ 1.50 crore/ 50,00,000) = ₹ 3

K = Cost of Capital = 12%

b = Retention Ratio (%) = 40%

r = IRR = 15%

br = Growth Rate (0.40X15%) = 6%

$P_0 = \frac{3(1-0.40)}{0.12-0.06}$

$= \frac{1.80}{0.12-0.06} = \frac{\text{Rs. } 1.80}{0.06}$

= ₹ 30.00

Question 2

(a) Mr. Shyam is holding the following securities:

Particulars of Securities	***Cost ₹***	***Dividend Interest ₹***	***Market Price ₹***	***Beta***
Equity shares:				
Gold Ltd.	*10,000*	*1,725*	*9,800*	*0.6*
Silver Ltd.	*15,000*	*1,000*	*16,200*	*0.8*
Bronze Ltd.	*14,000*	*700*	*20,000*	*0.6*
GOI Bonds	*36,000*	*3,600*	*34,500*	*1.0*

Average return of the portfolio is 15.7%.

Using Average Beta, Calculate:

(i) Expected rate of return in each case, using the Capital Asset Pricing Model (CAPM)

(ii) Risk free rate of return ***(8 Marks)***

(b) On 31st March, 2013, the following information about Bonds is available:

Name of Security	*Face Value ₹*	*Maturity Date*	*Coupon Rate*	*Coupon Date(s)*
Zero coupon	*10,000*	*31st March, 2023*	*N.A.*	*N.A.*
T-Bill	*1,00,000*	*20th June, 2013*	*N.A.*	*N.A.*
10.71% GOI 2023	*100*	*31st March, 2023*	*10.71*	*31st March*
10 % GOI 2018	*100*	*31st March, 2018*	*10.00*	*31st March & 31st October*

Calculate:

(i) If 10 years yield is 7.5% p.a. what price the Zero Coupon Bond would fetch on 31st March, 2013?

(ii) What will be the annualized yield if the T-Bill is traded @ 98500?

(iii) If 10.71% GOI 2023 Bond having yield to maturity is 8%, what price would it fetch on April 1, 2013 (after coupon payment on 31st March)?

(iv) If 10% GOI 2018 Bond having yield to maturity is 8%, what price would it fetch on April 1, 2013 (after coupon payment on 31st March)? ***(8 Marks)***

Answer

(a)

Particulars of Securities	*Cost (₹)*	*Dividend (₹)*	*Capital gain (₹)*
Gold Ltd.	10,000	1,725	–200
Silver Ltd.	15,000	1,000	1,200
Bronze Ltd.	14,000	700	6,000
GOI Bonds	36,000	3,600	–1,500
Total	75,000	7,025	5,500

Expected rate of return on market portfolio

$$\frac{\text{Dividend Earned} + \text{Capital appreciation}}{\text{Initial investment}} \times 100$$

$$= \frac{₹\ 7,025 + ₹\ 5,500}{₹\ 75,000} \times 100 = 16.7\%$$

Risk free return

$$\text{Average of Betas} = \frac{0.6 + 0.8 + 0.6 + 1.0}{4}$$

Average of Betas = 0.75

Average return = Risk free return + Average Betas (Expected return – Risk free return)

15.7 = Risk free return + 0.75 (16.7 – Risk free return)

Risk free return = 12.7%

Expected Rate of Return for each security is

Rate of Return	= Rf + β (Rm – Rf)
Gold Ltd.	= 12.7 + 0.6 (16.7 – 12.7) = 15.10%
Silver Ltd.	= 12.7 + 0.8 (16.7 – 12.7) = 15.90%
Bronz Ltd.	= 12.7+ 0.6 (16.7 – 12.7) = 15.10%
GOI Bonds	= 12.7 + 1.0 (16.7 – 12.7) = 16.70%

Alternatively by using Market Risk Premium

Gold Ltd.	= 12.7 + 0.6 x 4%	= 15.10%
Silver Ltd.	= 12.7 + 0.8 x 4%	= 15.90%
Bronz Ltd.	= 12.7+ 0.6 x 4%	= 15.10%
GOI Bonds	= 12.7 + 1.0x 4%	= 16.70%

(b) (i) Rate used for discounting shall be yield. Accordingly ZCB shall fetch:

$$= \frac{10000}{(1+0.075)^{10}} = ₹\ 4{,}852$$

(ii) The day count basis is actual number days / 365. Accordingly annualized yield shall be:

$$\text{Yield} = \frac{\text{FV-Price}}{\text{Price}} \times \frac{365}{\text{No. of days}} = \frac{100000-98500}{98500} \times \frac{365}{81} = 6.86\%$$

Note: Alternatively, it can also computed on 360 days a year.

(iii) Price GOI 2023 would fetch

= ₹ 10.71 PVAF(8%, 10) + ₹ 100 PVF (8%, 10)

= ₹ 10.71 x 6.71 + ₹ 100 x 0.4632

= ₹ 71.86 + ₹ 46.32 = ₹ 118.18

(iv) Price GOI 2018 Bond would fetch:

= ₹ 5 PVAF (4%, 10) + ₹ 100 PVF (4%, 10)

= ₹ 5 x 8.11 + ₹ 100 x 0.6756

= 40.55 + 67.56 = 108.11

Question 3

(a) R Ltd. and S Ltd. are companies that operate in the same industry. The financial statements of both the companies for the current financial year are as follows:

Balance Sheet

Particulars	***R. Ltd. (₹)***	***S. Ltd (₹)***
Equity & Liabilities		
Shareholders Fund		
Equity Capital (₹ 10 each)	*20,00,000*	*16,00,000*
Retained earnings	*4,00,000*	*-*
Non-current Liabilities		
16% Long term Debt	*10,00,000*	*6,00,000*
Current Liabilities	*14,00,000*	*8,00,000*
Total	***48,00,000***	***30,00,000***
Assets		
Non-current Assets	*20,00,000*	*10,00,000*
Current Assets	*28,00,000*	*20,00,000*
Total	***48,00,000***	***30,00,000***

Income Statement

	Particulars	***R. Ltd. (₹)***	***S. Ltd. (₹)***
A.	*Net Sales*	*69,00,000*	*34,00,000*
B.	*Cost of Goods sold*	*55,20,000*	*27,20,000*
C.	***Gross Profit (A-B)***	*13,80,000*	*6,80,00*
D.	*Operating Expenses*	*4,00,000*	*2,00,000*
E.	*Interest*	*1,60,000*	*96,000*
F.	***Earnings before taxes [C-(D+E)]***	*8,20,000*	*3,84,000*
G.	*Taxes @ 35%*	*2,87,000*	*1,34,400*
H.	*Earnings After Tax (EAT)*	*5,33,000*	*2,49,600*

Additional Information:

No. of equity shares	*2,00,000*	*1,60,000*
Dividend payment Ratio (D/P)	*20%*	*30%*
Market price per share	*₹ 50*	*₹ 20*

Assume that both companies are in the process of negotiating a merger through exchange of Equity shares:

You are required to:

(i) Decompose the share price of both the companies into EPS & P/E components. 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 both the companies.

(iii) Based on expected operating synergies, R Ltd. estimated that the intrinsic value of S Ltd. Equity share would be ₹ 25 per share on its acquisition. You are required to develop a range of justifiable Equity Share Exchange ratios that can be offered by R Ltd. to the shareholders of S Ltd. Based on your analysis on parts (i) and (ii), would you expect the negotiated terms to be closer to the upper or the lower exchange ratio limits and why? ***(8 Marks)***

(b) Following are the details of a portfolio consisting of three shares:

Share	*Portfolio weight*	*Beta*	*Expected return in %*	*Total variance*
A	*0.20*	*0.40*	*14*	*0.015*
B	*0.50*	*0.50*	*15*	*0.025*
C	*0.30*	*1.10*	*21*	*0.100*

Standard Deviation of Market Portfolio Returns = 10%

You are given the following additional data:

Covariance (A, B) = 0.030

Covariance (A, C) = 0.020

Covariance (B, C) = 0.040

Calculate the following:

(i) The Portfolio Beta

(ii) Residual variance of each of the three shares

(iii) Portfolio variance using Sharpe Index Model

(iv) Portfolio variance (on the basis of modern portfolio theory given by Markowitz) ***(8 Marks)***

Answer

(a) (i) Determination of EPS, P/E Ratio, ROE and BVPS of R Ltd.& S Ltd.

	R Ltd.	S Ltd.
EAT (₹)	5,33,000	2,49,600
N	200000	160000
EPS (EAT÷N)	2.665	1.56
Market Price Per Share	50	20
PE Ratio (MPS/EPS)	18.76	12.82
Equity Fund (Equity Value)	2400000	1600000
BVPS (Equity Value ÷ N)	12	10
ROE (EAT÷ EF) or ROE (EAT ÷ EF)	0.2221 22.21%	0.156 15.60%

(ii) Determination of Growth Rate of EPS of R Ltd.& S Ltd.

	R Ltd.	S Ltd.
Retention Ratio (1-D/P Ratio)	0.80	0.70
Growth Rate (ROE x Retention Ratio) or Growth Rate (ROE x Retention Ratio)	0.1777 17.77%	0.1092 10.92%

(iii) Justifiable equity share exchange ratio

(a) Market Price Based = MPS_S/MPS_R = ₹ 20/ ₹ 50 = 0.40:1 (lower limit)

(b) Intrinsic Value Based = ₹ 25/ ₹ 50 = 0.50:1 (max. limit)

Since R Ltd. has higher EPS, PE, ROE and higher growth expectations the negotiated term would be expected to be closer to the lower limit, based on existing share price.

(b) (i) Portfolio Beta

0.20 x 0.40 + 0.50 x 0.50 + 0.30 x 1.10 = 0.66

(ii) Residual Variance

To determine Residual Variance first of all we shall compute the Systematic Risk as follows:

$\beta_A^2 \times \sigma_M^2 = (0.40)^2(0.01) = 0.0016$

$\beta_B^2 \times \sigma_M^2 = (0.50)^2(0.01) = 0.0025$

$\beta_C^2 \times \sigma_M^2 = (1.10)^2(0.01) = 0.0121$

Residual Variance

A 0.015 – 0.0016 = 0.0134

B 0.025 – 0.0025 = 0.0225

C 0.100 – 0.0121 = 0.0879

(iii) Portfolio variance using Sharpe Index Model

Systematic Variance of Portfolio = $(0.10)^2 \times (0.66)^2 = 0.004356$

Unsystematic Variance of Portfolio = $0.0134 \times (0.20)^2 + 0.0225 \times (0.50)^2 + 0.0879 \times (0.30)^2 = 0.014072$

Total Variance = 0.004356 + 0.014072 = 0.018428

(iii) Portfolio variance on the basis of Markowitz Theory

$= (w_A \times w_A \times \sigma_A^2) + (w_A \times w_B \times Cov_{AB}) + (w_A \times w_C \times Cov_{AC}) + (w_B \times w_A \times Cov_{AB}) + (w_B \times w_B \times \sigma_B^2) + (w_B \times w_C \times Cov_{BC}) + (w_C \times w_A \times Cov_{CA}) + (w_C \times w_B \times Cov_{CB}) + (w_C \times w_C \times \sigma_c^2)$

= (0.20 x 0.20 x 0.015) + (0.20 x 0.50 x 0.030) + (0.20 x 0.30 x 0.020) + (0.20 x 0.50 x 0.030) + (0.50 x 0.50 x 0.025) + (0.50 x 0.30 x 0.040) + (0.30 x 0.20 x 0.020) + (0.30 x 0.50 x 0.040) + (0.30 x 0.30 x 0.10)

= 0.0006 + 0.0030 + 0.0012 + 0.0030 + 0.00625 + 0.0060 + 0.0012 + 0.0060 + 0.0090

= 0.0363

Question 4

(a) A manufacturing unit engaged in the production of automobile parts is considering a proposal of purchasing one of the two plants, details of which are given below:

Particulars	***Plant A***	***Plant B***
Cost	*₹ 20,00,000*	*₹ 38,00,000*
Installation charges	*₹ 4,00,000*	*₹ 2,00,000*
Life	*20 years*	*15 years*
Scrap value after full life	*₹ 4,00,000*	*₹ 4,00,000*
Output per minute (units)	*200*	*400*

The annual costs of the two plants are as follows:

Particulars	***Plant A***	***Plant B***
Running hours per annum	*2,500*	*2,500*
Costs:	***(In ₹)***	***(In ₹)***
Wages	*1,00,000*	*1,40,000*

Indirect materials	*4,80,000*	*6,00,000*
Repairs	*80,000*	*1,00,000*
Power	*2,40,000*	*2,80,000*
Fixed Costs	*60,000*	*80,000*

Will it be advantageous to buy Plant A or Plant B? Substantiate your answer with the help of comparative unit cost of the plants. Assume interest on capital at 10 percent. Make other relevant assumptions:

Note: *10 percent interest tables*

	20 Years	***15 Years***
Present value of ₹ 1	*0.1486*	*0.2394*
Annuity of ₹ 1 (capital recovery factor with 10% interest)	*0.1175*	*0.1315*

(7 Marks)

(b) *An importer booked a forward contract with his bank on 10th April for USD 2,00,000 due on 10th June @ ₹ 64.4000. The bank covered its position in the market at ₹ 64.2800.*

The exchange rates for dollar in the interbank market on 10th June and 20th June were:

	10th June	***20th June***
Spot USD 1=	*₹ 63.8000/8200*	*₹ 63.6800/7200*
Sport/June	*₹ 63.9200/9500*	*₹ 63.8000/8500*
July	*₹ 64.0500/0900*	*₹ 63.9300/9900*
August	*₹ 64.3000/3500*	*₹ 64.1800/2500*
September	*₹ 64.6000/6600*	*₹ 64.4800/5600*

Exchange Margin 0.10% and interest on outlay of funds @ 12%. The importer requested on 20th June for extension of contract with due date on 10th August.

Rates rounded to 4 decimal in multiples of 0.0025.

On 10th June, Bank Swaps by selling spot and buying one month forward.

Calculate:

(i) Cancellation rate

(ii) Amount payable on $ 2,00,000

(iii) Swap loss

(iv) Interest on outlay of funds, if any

(v) New contract rate

(vi) Total Cost ***(9 Marks)***

Answer

(a) Working Notes:

Calculation of Equivalent Annual Cost

	Machine A	Machine B
Cash Outlay	₹ 24,00,000	₹ 40,00,000
Less: PV of Salvage Value		
4,00,000 x 0.1486	₹ 59,440	
4,00,000 x 0.2394		₹ 95,760
Annuity Factor	0.1175	0.1315
	₹ 2,75,016	₹ 5,13,408

Computation of Cost Per Unit

	Machine A	**Machine B**
Annual Output (a)	2500 x 60 x 200	2500 x 60 x 400
	= 3,00,00,000	= 6,00,00,000
Annual Cost (b)	₹	₹
Wages	1,00,000	1,40,000
Indirect Material	4,80,000	6,00,000
Repairs	80,000	1,00,000
Powers	2,40,000	2,80,000
Fixed Cost	60,000	80,000
Equivalent Annual Cost	2,75,016	5,13,408
Total	12,35,016	17,13,408
Cost Per Unit (b)/(a)	0.041167	0.02860

Decision: As the unit cost is less in proposed Plant B, it may be recommended that it is advantageous to acquire Plant B.

(b) (i) Cancellation Rate:

The forward sale contract shall be cancelled at Spot TT Purchase for $ prevailing on the date of cancellation as follows:

$/ ₹ Market Buying Rate	₹ 63.6800

Less: Exchange Margin @ 0.10%	₹ 0.0636
	₹ 63.6163

Rounded off to ₹ 63.6175

(ii) Amount payable on $ 2,00,000

Bank sells $2,00,000 @ ₹ 64.4000	₹ 1,28,80,000
Bank buys $2,00,000 @ ₹ 63.6163	₹ 1,27,23,260
Amount payable by customer	₹ 1,56,740

(iii) Swap Loss

On 10th June the bank does a swap sale of $ at market buying rate of ₹ 63.8300 and forward purchase for June at market selling rate of ₹ 63.9500.

Bank buys at	₹ 63.9500
Bank sells at	₹ 63.8000
Amount payable by customer	₹ 0.1500

Swap Loss for $ 2,00,000 in ₹ = ₹ 30,000

(iv) Interest on Outlay of Funds

On 10thApril, the bank receives delivery under cover contract at ₹ 64.2800 and sell spot at ₹ 63.8000.

Bank buys at	₹ 64.2800
Bank sells at	₹ 63.8000
Amount payable by customer	₹ 0.4800

Outlay for $ 2,00,000 in ₹ 96,000

Interest on ₹ 96,000 @ 12% for 10 days ₹ 320

(v) New Contract Rate

The contract will be extended at current rate

$/ ₹ Market forward selling Rate for August	₹ 64.2500
Add: Exchange Margin @ 0.10%	₹ 0.0643
	₹ 64.3143

Rounded off to Rs. 64.3150

(vi) Total Cost

Cancellation Charges	₹ 1,56,740.00

Swap Loss	₹ 30,000.00
Interest	₹ 320.00
	₹ 1,87,060.00

Question 5

(a) Bank 'R' was established in 2005 and doing banking in India. The bank is facing DO OR DIE situation. There are problems of Gross NPA (Non Performing Assets) at 40% & CAR/CRAR (Capital Adequacy Ratio/ Capital Risk Weight Asset Ratio) at 4%. The net worth of the bank is not good. Shares are not traded regularly. Last week, it was traded @₹ 8 per share.

RBI Audit suggested that bank has either to liquidate or to merge with other bank.

Bank 'P' is professionally managed bank with low gross NPA of 5%.It has Net NPA as 0% and CAR at 16%. Its share is quoted in the market @ ₹ 128 per share. The board of directors of bank 'P' has submitted a proposal to RBI for take over of bank 'R' on the basis of share exchange ratio.

The Balance Sheet details of both the banks are as follows:

	Bank 'R' ***Amt. in ₹ lacs***	***Bank 'P'*** ***Amt. In ₹ lacs***
Paid up share capital	*140*	*500*
Reserves & Surplus	*70*	*5,500*
Deposits	*4,000*	*40,000*
Other liabilities	*890*	*2,500*
Total Liabilities	***5,100***	***48,500***
Cash in hand & with RBI	*400*	*2,500*
Balance with other banks	*-*	*2,000*
Investments	*1,100*	*15,000*
Advances	*3,500*	*27,000*
Other Assets	*100*	*2,000*
Total Assets	***5,100***	***48,500***

It was decided to issue shares at Book Value of Bank 'P' to the shareholders of Bank 'R'. All assets and liabilities are to be taken over at Book Value.

For the swap ratio, weights assigned to different parameters are as follows:

Gross NPA	*30%*

CAR	*20%*
Market price	*40%*
Book value	*10%*

(a) What is the swap ratio based on above weights?

(b) How many shares are to be issued?

(c) Prepare Balance Sheet after merger.

(d) Calculate CAR & Gross NPA % of Bank 'P' after merger. ***(11 Marks)***

(b) DEF Ltd. has imported goods to the extent of US$ 1 crore. The payment terms are 60 days interest-free credit. For additional credit of 30 days, interest at the rate of 7.75% p.a. will be charged.

The banker of DEF Ltd. has offered a 30 days loan at the rate of 9.5% p.a. Their quote for the foreign exchange is as follows:

Spot rate INR/US$	*62.50*
60 days forward rate INR/US$	*63.15*
90 days forward rate INR/US$	*63.45*

Which one of the following options would be better?

(i) Pay the supplier on 60th day and avail bank loan for 30 days.

(ii) Avail the supplier's offer of 90 days credit. ***(5 Marks)***

Answer

(a) (a) Swap Ratio

Gross NPA	5 : 40	i.e.	5/40 x 30% =	0.0375
CAR	4 : 16	i.e.	4/16 x 20% =	0.0500
Market Price	8 : 128	i.e.	8/128 x 40% =	0.025
Book Value	15 : 120	i.e.	15/120 x 10% =	0.0125
				0.125

Thus for every share of Bank 'R' 0.125 share of Bank 'P' shall be issued.

(b) No. of equity shares to be issued:

$$\frac{\text{Rs. 140 lac}}{\text{Rs. 10}} \times 0.125 = 1.75 \text{ lac shares}$$

(c) Balance Sheet after Merger

Calculation of Capital Reserve

Book Value of Shares	₹ 210.00 lac
Value of Shares issued	₹ 17.50 lac
Capital Reserve	₹ 192.50 lac

Balance Sheet

	₹ lac		₹ lac
Paid up Share Capital	517.50	Cash in Hand & RBI	2900.00
Reserves & Surplus	5500.00	Balance with other banks	2000.00
Capital Reserve	192.50	Investment	16100.00
Deposits	44000.00	Advances	30500.00
Other Liabilities	3390.00	Other Assets	2100.00
	53600.00		53600.00

(d) Calculation CAR & Gross NPA % of Bank 'P' after merger

$$\text{CAR/CRWAR} = \frac{\text{Total Capital}}{\text{Risky Weighted Assets}}$$

	Bank 'R'	Bank 'P'	Merged
	4%	16%	
Total Capital	₹ 210 lac	₹ 6000 lac	₹ 6210 lac
Risky Weighted Assets	₹ 5250 lac	₹ 37500 lac	₹ 42750 lac

$$\text{CAR} = \frac{\text{Rs.6210 lac}}{\text{Rs.42750 lac}} = 14.53\%$$

$$\text{GNPA Ratio} = \frac{\text{Gross NPA}}{\text{Gross Deposits}} \times 100$$

	Bank 'R'	Bank 'P'	Merged
GNPA (Given)	0.40	0.05	
	$0.40 = \frac{\text{GNPA}_R}{\text{Rs. 3500 lac}}$	$0.05 = \frac{\text{GNPA}_S}{\text{Rs. 27000 lac}}$	₹ 6210 lac

Gross NPA	₹ 1400 lac	₹ 1350 lac	₹ 2750 lac

(b) (I) Pay the supplier in 60 days

If the payment is made to supplier in 60 days the applicable forward rate for 1 USD	₹ 63.15
Payment Due	USD 1 crore
Outflow in Rupees (USD 1 crore × ₹ 63.15)	₹ 63.15 crore
Add: Interest on loan for 30 days@9.5% p.a.	₹ 0.50 crore
Total Outflow in ₹	₹ 63.65 crore

(II) Availing supplier's offer of 90 days credit

Amount Payable	USD 1.00000crore
Add: Interest on credit period for 30 days@7.75% p.a.	USD 0.00646 crore
Total Outflow in USD	USD 1.00646 crore
Applicable forward rate for 1 USD	₹ 63.45
Total Outflow in ₹ (USD 1.00646 crore × ₹ 63.45)	₹ 63.86 crore

Alternative 1 is better as it entails lower cash outflow.

Question 6

(a) R Ltd., requires a machine for 5 years. There are two alternatives either to take it on lease or buy. The company is reluctant to invest initial amount for the project and approaches their bankers. Bankers are ready to finance 100% of its initial required amount at 15% rate of interest for any of the alternatives.

Under lease option, upfront Security deposit of ₹ 5,00,000/- is payable to lessor which is equal to cost of machine. Out of which, 40% shall be adjusted equally against annual lease rent. At the end of life of the machine, expected scrap value will be at book value after providing, depreciation @ 20% on written down value basis.

Under buying option, loan repayment is in equal annual installments of principal amount, which is equal to annual lease rent charges. However in case of bank finance for lease option, repayment of principal amount equal to lease rent is adjusted every year, and the balance at the end of 5th year.

Assume Income tax rate is 30%, interest is payable at the end of every year and discount rate is @ 15% p.a. The following discounting factors are given:

Year	*1*	*2*	*3*	*4*	*5*
Factor	*0.8696*	*0.7562*	*0.6576*	*0.5718*	*0.4972*

Which option would you suggest on the basis of net present values? ***(8 Marks)***

(b) There are two Mutual Funds viz. D Mutual Fund Ltd. and K Mutual Fund Ltd. Each having close ended equity schemes.

NAV as on 31-12-2014 of equity schemes of D Mutual Fund Ltd. is ₹ 70.71 (consisting 99% equity and remaining cash balance) and that of K Mutual Fund Ltd. is 62.50 (consisting 96% equity and balance in cash).

Following is the other information:

Particular	***Equity Schemes***	
	D Mutual Fund Ltd.	***K Mutual Fund Ltd.***
Sharpe Ratio	*2*	*3.3*
Treynor Ratio	*15*	*15*
Standard deviation	*11.25*	*5*

There is no change in portfolios during the next month and annual average cost is ₹ 3 per unit for the schemes of both the Mutual Funds.

If Share Market goes down by 5% within a month, calculate expected NAV after a month for the schemes of both the Mutual Funds.

For calculation, consider 12 months in a year and ignore number of days for particular month. ***(8 Marks)***

Answer

(a) Cash outflow under borrow and buy option

Working Notes:

1. Calculation of Interest Amount

Year	Repayment of Principal (₹)	Principal Outstanding (₹)	Interest (₹)	Closing Balance (₹)
1	1,00,000	5,00,000	75,000	4,00,000
2	1,00,000	4,00,000	60,000	3,00,000
3	1,00,000	3,00,000	45,000	2,00,000
4	1,00,000	2,00,000	30,000	1,00,000
5	1,00,000	1,00,000	15,000	-

2. Depreciation Schedule

Year	Opening Balance (₹)	Depreciation (₹)	Closing Balance (₹)
1	5,00,000	1,00,000	4,00,000
2	4,00,000	80,000	3,20,000
3	3,20,000	64,000	2,56,000
4	2,56,000	51,200	2,04,800
5	2,04,800	40,960	1,63,840

3. Tax Benefit on Depreciation and Interest

Year	Interest (₹)	Depreciation (₹)	Total (₹)	Tax Benefit @ 30% (₹)
1	75,000	1,00,000	1,75,000	52,500
2	60,000	80,000	1,40,000	42,000
3	45,000	64,000	1,09,000	32,700
4	30,000	51,200	81,200	24,360
5	15,000	40,960	55,960	16,788

PV of Cash Outflow in Borrow and Buying Option

Year	Cash outflow (₹)	Tax Benefit (₹)	Net Cash Outflow (₹)	PVF@15%	PV (₹)
1	1,75,000	52,500	1,22,500	0.8696	1,06,526
2	1,60,000	42,000	1,18,000	0.7562	89,232
3	1,45,000	32,700	1,12,300	0.6576	73,848
4	1,30,000	24,360	1,05,640	0.5718	60,405
5	1,15,000	16,788	98,212	0.4972	48,831
5	(1,63,840)		(1,63,840)	0.4972	(81,461)
					2,97,381

Cash outflow under borrow and lease option

Cash payment to Lessor/ Tax Benefits on Lease Payment (Annual Lease Rent = ₹1,00,000)

Year	Net Lease Rent(₹)	Security Deposit (₹)	Tax Benefit on Gross Lease Rent (₹)	Net Cash Outflow (RS.)

1	60,000*		30,000	30,000
2	60,000		30,000	30,000
3	60,000		30,000	30,000
4	60,000		30,000	30,000
5	60,000	(3,00,000)	30,000	(2,70,000)

* ₹ 1,00,000 – ₹ 40,000 = ₹ 60,000

Cash payment to Bank/ Tax Benefits on Interest Payment

Year	Principal Payment (₹)	Interest (₹)	Total (₹)	Tax Benefit on Interest (₹)	Net Outflow (₹)
1	40,000	75,000	1,15,000	22,500	92,500
2	40,000	69,000	1,09,000	20,700	88,300
3	40,000	63,000	1,03,000	18,900	84,100
4	40,000	57,000	97,000	17,100	79,900
5	3,40,000	51,000	3,91,000	15,300	3,75,700

PV of Cash Outflow in Borrow and Leasing Option

Year	Cash outflow to Bank(₹)	Cash Outflow under Lease (RS.)	Total (₹)	PVF@15%	PV (₹)
1	92,500	30,000	1,22,500	0.8696	1,06,526
2	88,300	30,000	1,18,300	0.7562	89,458
3	84,100	30,000	1,14,100	0.6576	75,032
4	79,900	30,000	1,09,900	0.5718	62,841
5	3,75,700	(2,70,000)	1,05,700	0.4972	52,554
					3,86,411

Since PV of cash outflow is least in case of borrow and buying option it should be opted for.

(b) Working Notes:

(i) Decomposition of Funds in Equity and Cash Components

	D Mutual Fund Ltd.	K Mutual Fund Ltd.
NAV on 31.12.14	₹ 70.71	₹ 62.50

% of Equity	99%	96%
Equity element in NAV	₹ 70	₹ 60
Cash element in NAV	₹ 0.71	₹ 2.50

(ii) Calculation of Beta

(a) D Mutual Fund Ltd.

$$\text{Sharpe Ratio} = 2 = \frac{E(R) - R_f}{\sigma_D} = \frac{E(R) - R_f}{11.25}$$

$E(R) - R_f = 22.50$

$$\text{Treynor Ratio} = 15 = \frac{E(R) - R_f}{\beta_D} = \frac{22.50}{\beta_D}$$

$\beta_D = 22.50/15 = 1.50$

(b) K Mutual Fund Ltd.

$$\text{Sharpe Ratio} = 3.3 = \frac{E(R) - R_f}{\sigma_K} = \frac{E(R) - R_f}{5}$$

$E(R) - R_f = 16.50$

$$\text{Treynor Ratio} = 15 = \frac{E(R) - R_f}{\beta_K} = \frac{22.50}{\beta_K}$$

$\beta_K = 16.50/15 = 1.10$

(iii) Decrease in the Value of Equity

	D Mutual Fund Ltd.	K Mutual Fund Ltd.
Market goes down by	5.00%	5.00%
Beta	1.50	1.10
Equity component goes down	7.50%	5.50%

(iv) Balance of Cash after 1 month

	D Mutual Fund Ltd.	K Mutual Fund Ltd.
Cash in Hand on 31.12.14	₹ 0.71	₹ 2.50
Less: Exp. Per month	₹ 0.25	₹ 0.25
Balance after 1 month	₹ 0.46	₹ 2.25

NAV after 1 month

	D Mutual Fund Ltd.	K Mutual Fund Ltd.
Value of Equity after 1 month		
70 x (1 - 0.075)	₹ 64.75	-
60 x (1 - 0.055)	-	₹ 56.70
Cash Balance	0.46	2.25
	65.21	58.95

Question 7

*Write short notes on any **four** of the following:*

(a) Explain the meaning of the following relating to Swap transactions:

(i) Plain Vanila Swaps

(ii) Basis Rate Swaps

(iii) Asset Swaps

(iv) Amortising Swaps

(b) Distinction between Open ended schemes and Closed ended schemes

(c) State any four assumptions of Black Scholes Model

(d) Give the meaning of Caps, Floors and Collar options with respect to Interest.

(e) Global depository receipts ***(4 x 4 = 16 Marks)***

Answer

(a) (i) Plain Vanilla Swap: Also called generic swap andit involves the exchange of a fixed rate loan to a floating rate loan. Floating rate basis can be LIBOR, MIBOR, Prime Lending Rate etc.

(ii) Basis Rate Swap: Similar to plain vanilla swap with the difference payments based on the difference between two different variable rates. For example one rate may be 1 month LIBOR and other may be 3-month LIBOR. In other words two legs of swap are floating but measured against different benchmarks.

(iii) Asset Swap: Similar to plain vanilla swaps with the difference that it is the exchange fixed rate investments such as bonds which pay a guaranteed coupon rate with floating rate investments such as an index.

(iv) Amortising Swap: An interest rate swap in which the notional principal for the interest payments declines during the life of the swap. They are particularly useful for borrowers who have issued redeemable bonds or debentures. It enables them to interest rate hedging with redemption profile of bonds or debentures.

(b) Open Ended Scheme do not have maturity period. These schemes are available for subscription and repurchase on a continuous basis. Investor can conveniently buy and sell unit. The price is calculated and declared on daily basis. The calculated price is termed as NAV. The buying price and selling price is calculated with certain adjustment to NAV. The key future of the scheme is liquidity.

Close Ended Scheme has a stipulated maturity period normally 5 to 10 years. The Scheme is open for subscription only during the specified period at the time of launch of the scheme. Investor can invest at the time of initial issue and thereafter they can buy or sell from stock exchange where the scheme is listed. To provide an exit rout some close-ended schemes give an option of selling bank (repurchase) on the basis of NAV. The NAV is generally declared on weekly basis.

(c) The model is based on a normal distribution of underlying asset returns. The following assumptions accompany the model:

1. European Options are considered,
2. No transaction costs,
3. Short term interest rates are known and are constant,
4. Stocks do not pay dividend,
5. Stock price movement is similar to a random walk,
6. Stock returns are normally distributed over a period of time, and
7. The variance of the return is constant over the life of an Option.

(d) **Cap Option:** It is a series of call options on interest rate covering a medium-to-long term floating rate liability. Purchase of a Cap enables the a borrowers to fix in advance a maximum borrowing rate for a specified amount and for a specified duration, while allowing him to avail benefit of a fall in rates. The buyer of Cap pays a premium to the seller of Cap.

Floor Option: It is a put option on interest rate. Purchase of a Floor enables a lender to fix in advance, a minimal rate for placing a specified amount for a specified duration, while allowing him to avail benefit of a rise in rates. The buyer of the floor pays the premium to the seller.

Collars Option: It is a combination of a Cap and Floor. The purchaser of a Collar buys a Cap and simultaneously sells a Floor. A Collar has the effect of locking its purchases into a floating rate of interest that is bound on both high side and the low side.

(e) **Global Depository Receipt:** It is an instrument in the form of a depository receipt or certificate created by the Overseas Depository Bank outside India denominated in dollar and issued to non-resident investors against the issue of ordinary shares or FCCBs of the issuing company. It is traded in stock exchange in Europe or USA or both. A GDR usually represents one or more shares or convertible bonds of the issuing company.

A holder of a GDR is given an option to convert it into number of shares/bonds that it represents after 45 days from the date of allotment. The shares or bonds which a holder of GDR is entitled to get are traded in Indian Stock Exchanges. Till conversion, the GDR does not carry any voting right. There is no lock-in-period for GDR.