Question No.1 is compulsory.

*Candidates are also required to answer any **five** questions from the remaining **six** questions.*

Working notes should form part of the respective answers.

Question 1

(a) *A US investor chose to invest in Sensex for a period of one year. The relevant information is given below.*

Size of investment ($)	20,00,000
Spot rate 1year ago (₹/$)	42.50/60
Spot rate now (₹/$)	43.85/90
Sensex 1 year ago	3,256
Senex now	3,765
Inflation in US	5%
Inflation in India	9%

   (i)   *Compute the nominal rate of return to the US investor.*

   (ii)   *Compute the real depreciation /appreciation of Rupee.*

   (iii)   *What should be the exchange rate if relevant purchasing power parity holds good?*

   (iv)   *What will be the real return to an Indian investor in Sensex?*   **(5 Marks)**

(b) *Bank A enters into a Repo for 21 days with Bank B in 8% Government of India Bonds 2020 @ 6.10% for ₹ 5 crore. Assuming that clean price is ₹ 97.30 and initial margin is 1.50% and days of accrued interest are 240 days (assume 360 days in a year).*

   Compute:

   (i)   *the dirty price.*

   (ii)   *The repayment at maturity.*   **(5 Marks)**

(c) *Following is the information for the free options bond:*

Face value of the bond	₹ 1,000
Coupon rate	7%
Terms of Maturity	7 years
Yield to Maturity	8%

   You are required to calculate:

   (i)   *Market price of the bound and duration.*

(ii)   If there is an increase in yield by 35 basis points, what would be the price of bond?

Present Value	t_1	t_2	t_3	t_4	t_5	t_6	t_7
$PVIF_{0.07,t}$	0.935	0.874	0.817	0.764	0.714	0.667	0.623
$PVIF_{0.08,t}$	0.926	0.857	0.794	0.735	0.681	0.631	0.584

(5 Marks)

(d)   M/s. B Ltd. has declared dividend of ₹ 2.50 per share on the EPS of ₹ 7. Earnings of the company are expected to grow at the rate of 10% for the next 3 years and to be stabilized at 3% thereafter.

The pay-out ratio is expected to remain at the same level during 3 years and then will increase to 60%. If required rate of return is 16% calculate:

(i)   The current price of the share.

(ii)   The expected price of share of B Ltd. At the end of 3rd year.

Following table may be used for calculations.

Present Values	t_1	t_2	t_3	t_4	t_5
$PVIF_{0.16,t}$	0.862	0.743	0.641	0.553	0.477

(5 Marks)

Answer

(a) (i)   Nominal rate of return to the US investor

Size of investment ($)	20,00,000
Size of investment (₹) ($ 20,00,000 x 42.50)	8,50,00,000
Sensex at T_o	3,256
No. of units of Sensex that can be purchased at T_o	
(₹ 8,50,00,000/3,256)	26,105
Sensex at T_1	3,765
Sale of Sensex (26,105 x 3,765)	9,82,85,325
US$ at T_1	₹ 43.90
Equivalent Amount in US$	22,38,846
Gain in US$	2,38,846
Nominal rate to US investor	11.94%

(ii) Real Appreciation/Depreciation of Rupee

Real Exchange Rate (Buying) = $43.85 \dfrac{(1+0.05)}{(1+0.09)}$ = 42.24

Real Appreciation of ₹ = $\dfrac{42.50 - 42.24}{42.50}$ x 100 = 0.61%

(iii) Exchange rate if relevant purchasing power parity holds

Buying Rate = $42.50 \dfrac{(1+0.09)}{(1+0.05)}$ = 44.12

Selling rate = $42.60 \dfrac{(1+0.09)}{(1+0.05)}$ = 44.22

Exchange rate = 44.12/44.22

(iv) Real return to Indian Investor in Sensex

Nominal Return = $\dfrac{3,765 - 3,256}{3,256}$ x 100 = 15.63%

Real return = $\dfrac{(1.1563)}{(1.09)}$ - 1 = 0.0608 or 6.08%

(b) **(i)** Dirty Price

= Clean Price + Interest Accrued

= 97.30 + $100 \times \dfrac{8}{100} \times \dfrac{240}{360}$ = 102.63

(ii) First Leg (Start Proceed)

= Nominal Value x $\dfrac{\text{Dirty Price}}{100}$ x $\dfrac{100 - \text{Initial Margin}}{100}$

= ₹ 5,00,00,000 x $\dfrac{102.63}{100} \times \dfrac{100 - 1.50}{100}$ = ₹ 5,05,45,275

Second Leg (Repayment at Maturity) = Start Proceed x $\left(1 + \text{Repo rate} \times \dfrac{\text{No. of days}}{360}\right)$

= ₹ 5,05,45,275 x $\left(1 + 0.0610 \times \dfrac{21}{360}\right)$ = ₹ 5,07,25,132

(c) (i) (1) Market price and duration of Bond

= 70 (PVIAF 8%,7) + 1,000 (PVIF 8%,7)

= 70 (5.208) + 1,000 (0.584) = 364.56 + 584.00 = 948.56

(2) Duration of Bond

Period	Cash flow (₹)	PVF@8%	PV (₹)	Prob.	Prob. x T
1	70	0.926	64.82	0.0683	0.0683
2	70	0.857	59.99	0.0632	0.1264
3	70	0.794	55.58	0.0586	0.1758
4	70	0.735	51.45	0.0542	0.2168
5	70	0.681	47.67	0.0503	0.2515
6	70	0.631	44.17	0.0466	0.2796
7	1,070	0.584	624.88	0.6588	4.6116
			948.56		5.73

Duration of the Bond is 5.73 years

(ii) Price of Bond if increase in yield by 35 basis points

Period	Cash flow (₹)	PVF@8.35%	PV (₹)
1	70	0.923	64.61
2	70	0.852	59.64
3	70	0.786	55.02
4	70	0.726	50.82
5	70	0.670	46.90
6	70	0.618	43.26
7	1,070	0.570	609.90
			930.15

Alternatively, if the same increase in yield is linked with duration as computed in sub part (i), then answer will be computed as follows:

Volatility of Bond = $\dfrac{\text{Duration}}{1 + \text{YTM}} = \dfrac{5.73}{1+0.08} = 5.306$

The expected market price if increase in yield is by 35 basis points.

= ₹ 948.56 × 0.35 (5.306/100) = ₹ 17.62

Hence expected market price is ₹ 948.56 – ₹ 17.62 = ₹ 930.94

Hence, the market price will decrease.

(d) Working Notes:

Period	EPS	Dividend
1	7.70	2.750
2	8.47	3.025
3	9.317	3.327
4th onwards	9.60	5.76

(i)   Current price of the Share

= PV of Dividends upto 3 Years + PV of Expected price of share of at the end of 3rd year

Expected price of share of B Ltd. at the end of 3rd year = $\dfrac{5.76}{0.16 - 0.03}$ = ₹ 44.31

Accordingly, Current Market Price of Share shall be:

= 2.750 x 0.862 + 3.025 x 0.743 + 3.327 x 0.641 + 44.31 x 0.641

= 2.371 + 2.248 + 2.133 + 28.403 = ₹ 35.155 say ₹ 35.16

(ii)   Expected price of share of B Ltd. at the end of 3rd year

= $\dfrac{5.76}{0.16 - 0.03}$ = ₹ 44.31

Question 2

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

Share	Portfolio weight	Beta	Expected return in %	Total Variance
DGS	0.35	0.30	12%	0.010
DV	0.25	1.20	18%	0.030
BP	0.40	0.50	10%	0.015

Standard Deviation of Market Portfolio Returns = 14%

Covariance (DGS, DV) = 0.020,

Covariance (DV, BP) = 0.050,

Covariance (BP, DGS) = 0.030

You are required to calculate:

(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)

(b) *Mr. A is holding 1000 shares of face value of ₹ 100 each of M/s. ABC Ltd. He wants to hold these shares for long term and have no intention to sell.*

On 1st January 2020, M/s XYZ Ltd. Has made short sales of M/s. ABC Ltd.'s shares and approached Mr. A to lend his shares under Stock Lending Scheme with following terms:

(i) *Shares to be borrowed for 3 months from 01-01-2020 to 31-03-2020,*

(ii) *Lending Charges/Fees of 1% to be paid every month on the closing price of the stock quoted in Stock Exchange and*

(iii) *Bank Guarantee will be provided as collateral for the value as on 01-01-2020.*

Other Information:

(a) *Cost of Bank Guarantee is 8% per annum,*

(b) *On 29-02-2020 M/s. ABC Ltd.'s share quoted in Stock Exchange on various dates are as follows:*

Date	Share Price in Scenario -1 Bullish	Share Price in Scenario -2 Bullish
01-01-2020	1000	1000
31-01-2020	1020	980
29-02-2020	1040	960
31-03-2020	1050	940

You are required to find out:

(i) *Earning of Mr. A through Stock Lending Scheme in both the scenarios,*

(ii) *Total Earnings of Mr. A during 01-01-2020 to 31-03-2020 in both the scenarios,*

(iii) *What is the Profit or loss to M/s. XYZ by shorting the shares using through Stock Lending Scheme in both the scenarios?* **(8 Marks)**

Answer

(a) (i) Portfolio Beta

0.35 x 0.30 + 0.25 x 1.20 + 0.40 x 0.50 = 0.605

(ii) Residual Variance

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

$\beta_A^2 \times \sigma_M^2 = (0.30)^2(0.14)^2 = 0.001764$

$\beta_B^2 \times \sigma_M^2 = (1.20)^2(0.14)^2 = 0.028224$

$\beta_C^2 \times \sigma_M^2$ = $(0.50)^2(0.14)^2$ = 0.0049

Residual Variance

DGS   0.010 – 0.001764 = 0.008236

DV   0.030 – 0.028224 = 0.001776

BP   0.015 – 0.0049 = 0.0101

(iii) Portfolio variance using Sharpe Index Model

Systematic Variance of Portfolio = $(0.14)^2$ x $(0.605)^2$ = 0.007174 or 0.0072

Unsystematic Variance of Portfolio = 0.008236 x $(0.35)^2$ + 0.001776 x $(0.25)^2$ + 0.0101 x $(0.40)^2$ = 0.002736 or 0.0027

Total Variance = 0.007174 + 0.002736 = 0.00991 or 0.0099

(iv) Portfolio variance on the basis of Markowitz Theory

$$= (wA \times wAx\,\sigma_A^2) + (wA \times wBxCovAB) + (wA \times wCxCovAC) + (wB \times wAxCovAB)$$

$$+ (wB \times wBx\,\sigma_B^2) + (wB \times wCxCovBC) + (wC \times wAxCovCA) + (wC \times wBxCovCB)$$

$$+ (wC \times wCx\,\sigma_C^2)$$

= (0.35 x 0.35 x 0.010) + (0.35 x 0.25 x 0.020) + (0.25 x 0.40 x 0.050) + (0.40 x 0.35 x 0.030) + (0.25 x 0.35 x 0.020) + (0.40 x 0.25 x 0.050) + (0.35 x 0.40 x 0.030) + (0.25 x 0.25 x 0.030) + (0.40 x 0.40 x 0.015)

= 0.001225 + 0.00175 + 0.005 + 0.0042 + 0.00175 + 0.005 + 0.0042 + 0.001875 + 0.0024

= 0.0274

(b)

		Scenario 1	Scenario 2
(i)	**Earnings of Mr. A through stock lending scheme**		
	Lending fee		
	31-01-20 1020 x 1% and 980 x 1%	10.20	9.80
	29-02-20 1040 x 1% and 960 x 1%	10.40	9.60
	31-03-20 1050 x 1% and 940 x 1%	10.50	9.40
	Earnings from lending per Share (A)	31.10	28.80
	Total No. of Shares	1000	1000
	Total Earning from Lending	31,100	28,800

(ii)	**Total Earnings of Mr. A during 01-01-2020 to 31-01-2020**		
	Dividend income per Share (B)	25.00	25.00
	Total earnings per share (A) + (B)	56.10	53.80
	Total No. of Shares	1000	1000
	Total Earning	56,100	53,800
(iii)	**Profit or loss to M/s. XYZ**		
	Gain on shortening the shares		
	(1,000 – 1,050) and (1,000 - 940)	(50.00)	60.00
	Lending fees paid	(31.10)	(28.80)
	Bank guarantee charges @ 8%	(20.00)	(20.00)
	Gain Per Share	(101.10)	11.20
	Total No. of Shares	1000	1000
	Total Gain on shortening the shares	(1,01,100)	11,200

Question 3

(a) On 1st April, an open ended scheme of mutual fund had 400 lakh units outstanding with Net Assets Value (NAV) of ₹ 19. At the end of April, it issued 5 lakh units at an opening NAV plus 2% load, adjusted for dividend equalization. At the end of May, 4 Lakh units were repurchased at the opening NAV less 2% exit load adjusted for dividend equilization. At the end of June, 60% of its available income was distributed.

In respect of April-June quarter, the following additional information is available:

Particulars	₹ in Lakhs
Portfolio value appreciation	515.67
Income of April	31.960
Income of May	46.125
Income for June	58.470

You are required to calculate:

(i)   Income available for distribution;

(ii)   Issue price at the end of April;

(iii) Repurchase price at the end of May; and

(iv)   Net Asset Value (NAV) as on 30th June.   *(8 Marks)*

(b) B Ltd. wants to acquire S Ltd. and has offered a swap ratio of 2 : 3 (2 shares for every 3 share of S Ltd.) Following information is available:

Particulars	B Ltd.	S Ltd.
Profit after tax (in ₹)	21,00,000	4,50,000
Equity shares outstanding (Nos.)	6,00,000	1,80,000
EPS (in ₹)	3.5	2.5
PE Ratio	10 times	7 times
Price quoting per share on BSE before the merger announcement	35	17.5

Required:

(i) The number of equity shares to be issued by B Ltd. for acquisition of S Ltd.

(ii) What is the EPS of B Ltd. after the acquisition?

(iii) Determine the equivalent earnings per share of S Ltd. and calculate per share gain or loss to shareholders of S Ltd.

(iv) What is the expected market price per share of B Ltd. after the acquisition, assuming its PE Multiple remains unchanged?

(v) Determine the market value of the merged firm.

(vi) After the announcement of merger, price of shares of S Ltd. rose by 10% on BSE. Mr. X, an investor, having 10,000 shares of S Ltd. is having another investment opportunity, which yields annual return of 14% is seeking your advise whether he needs to offload the shares in the market or accept the shares from B Ltd.

(8 Marks)

Answer

(a) Calculation of Income available for Distribution

	Units (Lakh)	Per Unit (₹)	Total (₹ In lakh)
Income from April	400	0.0799	31.960
Add: Dividend equalization collected on issue	5	0.0799	0.3995
	405	0.0799	32.3595
Add: Income from May		0.1139	46.125
	405	0.1938	78.4845
Less: Dividend equalization paid on repurchase	4	0.1938	(0.7752)
	401	0.1938	77.7093

Add: Income from June		0.1458	58.470
	401	0.3396	136.1793
Less: Dividend Paid		0.2038	(81.7076)
	401	0.1358	54.4717

Calculation of Issue Price at the end of April

	₹
Opening NAV	19.00000
Add: Entry Load 2% of ₹ 19	(0.38000)
	19.38000
Add: Dividend Equalization paid on Issue Price	0.07999
	19.45999
	Or 19.46

Calculation of Repurchase Price at the end of May

	₹
Opening NAV	19.0000
Less: Exit Load 2% of ₹ 19	(0.3800)
	18.6200
Add: Dividend Equalization paid on Issue Price	0.1938
	18.8138

Closing NAV as on 30th June

		₹ (Lakh)
Opening Net Asset Value (₹ 19 × 400)		7,600.0000
Portfolio Value Appreciation		515.6700
Issue of Fresh Units (5 × 19.46)		97.3000
Income Received		136.5550
(31.960 + 46.125 + 58.470)		
		8349.5250
Less: Units repurchased (4 × 18.8138)	75.2552	
Income Distributed	81.7076	156.9628
Closing Net Asset Value		8,192.5622
Closing Units (400 + 5 – 4) lakh		401 lakhs
∴ Closing NAV as on 30th June		₹20.4303

(b) **(i)** The number of shares to be issued by B Ltd.:

The Exchange ratio is 2:3

So, new Shares = 1,80,000 x $\frac{2}{3}$ = 1,20,000 shares.

(ii) EPS of B Ltd. after acquisition:

Total Earnings	(₹ 21,00,000 + ₹ 4,50,000)	₹25,50,000
No. of Shares	(6,00,000 + 1,20,000)	7,20,000
EPS	(₹ 25,50,000/7,20,000)	₹ 3.5416 or 3.54

(iii) Equivalent EPS of S Ltd. and gain/loss to shareholders:

Equivalent EPS of S Ltd. (₹ 3.54 x $\frac{2}{3}$)	₹ 2.36
Less: EPS before merger	₹ 2.50
Loss	(₹ 0.14)

(iv) New Market Price of B Ltd. (P/E remaining unchanged):

Present P/E Ratio of B Ltd.	10 times
Expected EPS after merger	₹ 3.54
Expected Market Price (₹3.54 x 10)	₹ 35.40

(v) **Market Value of merged firm:**

Total number of Shares	7,20,000
Expected Market Price	₹ 35.40
Total value (7,20,000 x 35.40)	₹ 2,54,88,000

(vi)

(1) Equivalent EPS of S Ltd.	₹ 2.36
(2) BSE price per share before merger announcement	₹ 17.50
(3) After the merger announcement 10% increase in price of share	₹ 1.75
(4) Present Market Price of share (2 + 3)	₹ 19.25
(5) Return on Market Price per share (1/4)	12.26

As Mr. X is having another opportunity to earn 14% and expected return on S Ltd.'s share is 12.26%, it is advisable to offload in market.

Question 4

(a)   M/s. Taxi Travels operators is having 108 no. of vehicles, all are running on diesel, and have the remaining lives of 3 years. To reduce the pollution the company has decided to convert all vehicles into CNG Mode or Electric Mode by modifying the existing vehicles, which will have lives of 6 years and 4 years respectively. The initial investment outlay of modification and annual operating costs are expected to be as follows:

Particulars	Diesel	CNG	Electric
Investment for modification	-	5,00,000	6,00,000
Annual Operating Costs	2,50,000	1,50,000	60,000
Salvage value	10,000	1,00,000	50,000

Revenue from each vehicle is expected to be ₹ 25,000 per month

(i)   If the hurdle rate is 12%, which system should Taxi Travels choose?

(ii)   Find out profit for each vehicle and also total profit to the company.

Year	1	2	3	4	5	6
PVIF	0.8929	0.7972	0.7118	0.6355	0.5674	0.5066

(8 Marks)

(b)   Following information is available for M/s. ABC Ltd.

Current dividend   ₹ 2.50 per share

Discount Rate   10.5 %

Growth rate   2%

(i)   Calculate the present price of the share of ABC Ltd.

(ii)   Is its stock overvalued, if stock price is ₹ 35, ROE 9% and EPS ₹ 2.25.   **(8 Marks)**

Answer

(a)   PV of Total Cash Outflows

Sl. No.	Particulars	Diesel	CNG	Electric
1	Life in years	3	6	4
2	Investment in Modification (₹)	0	5,00,000	6,00,000
3	Annual Operating Cost (₹)	2,50,000	1,50,000	60,000
4	PV Factors for 3, 6 & 4 Years	2.4019	4.1114	3.0374
5	PV of Annual Operating Cost (3 x 4) (₹)	6,00,475	6,16,710	1,82,244
6	Less: PV of Salvage Value (₹)	(7,118)	(50,660)	(31,775)

7	Total Outflow (2+5+6)	5,93,357	10,66,050	7,50,469
8	PVAF (12% for 3,6 & 4)	2.4019	4.1114	3.0374
9	Equivalent Annual Cost (7/8)	2,47,037	2,59,291	2,47,076
10	Revenue for each vehicle (₹)	3,00,000	3,00,000	3,00,000
11	Profit for each vehicle (10 – 9)	52,963	40,709	52,924
12	No. of Vehicle	108	108	108
13	Profit to the company (11 x 12)	57,20,004	43,96,572	57,15,792

Company's profit is marginally more when the vehicles are run on Diesel than on the Electric. Since the company's intention is not only cost saving but to reduce pollution then it is advisable to for Electric Mode.

(b) **(i)** Present Value of the stock of ABC Ltd. Is:-

$$V_o = \frac{2.50(1.02)}{0.105-0.02} = ₹\ 30/-.$$

(ii) Value of stock under the PE Multiple Approach

Particulars	
Actual Stock Price	₹ 35.00
Return on equity	9%
EPS	₹ 2.25
PE Multiple (1/Return on Equity) = 1/9%	11.11
Market Price per Share	₹ 25.00

Since, Actual Stock Price is higher, hence it is overvalued.

OR

Value of the Stock under the Earnings Growth Model

Particulars	
Actual Stock Price	₹ 35.00
Return on equity	9%
EPS	₹ 2.25
Growth Rate	2%
Market Price per Share [EPS ×(1+g)]/(K$_e$ – g) = ₹ 2.25 × 1.02/0.07	₹ 32.79

Since, Actual Stock Price is higher, hence it is overvalued.

Question 5

(a) A Ltd. decided to acquire a machine costing ₹ 5,00,000. The expected life of machine is 10 years with no salvage value. Depreciation will be charged on straight line basis. Tax rate is 30%. The financial manager seeks your advice for selection between the following two alternatives using Bower–Herringer-Williamson method, using cost of capital at the rate of 12%.

　(i) *Leasing:* The leasing company is expecting a minimum return of 10% on its investment in leasing business and lease payment will be received in advance.

　(ii) *Loan:* The loan will carry interest rate of 15% and the annual instalment will be paid in advance.

　　(Round off all calculations to nearest whole numbers)

Present Value	t_1	t_2	t_3	t_4	t_5	t_6	t_7	t_8	t_9	t_{10}
$PVIF_{0.10,t}$	0.909	0.826	0.751	0.683	0.621	0.565	0.514	0.467	0.425	0.386
$PVIF_{0.12,t}$	0.893	0.797	0.712	0.636	0.568	0.507	0.453	0.404	0.361	0.322
$PVIF_{0.15,t}$	0.870	0.757	0.658	0.572	0.497	0.432	0.376	0.327	0.284	0.247

(8 Marks)

(b) (i) Interest rates for 3 months in USA and Canada are as follows:

Currency	Borrow	Interest
US $	4%	2.5%
Canadian $	4.5%	3.5 %

　(ii) Can $/ US $ spot　　　　　1.235 ---- 1.240

　　3 months forward　　　　1.25 5---- 1.260

　　Advice, the currency in which borrowing and lending for 3 months needs to be done for the US company. Take 3 months = 90/360 days. *(8 Marks)*

Answer

(a) (i) Computation of lease rental

$$= \frac{\text{Cost of Machine}}{1 + \text{PVAF}(10\%, 9\text{yrs})}$$

$$= \frac{₹\,5,00,000}{1 + 5.761} = \frac{₹\,5,00,000}{6.761} = ₹\,73,954$$

(ii) Financial Advantage

	(₹)
Present value of loan payment	5,00,000
Present value of lease payment discounted at 15% ₹ 73,954 x (1+ 4.773)	(4,26,936)
	73,064

(iii) Computation of tax shield on borrowing

$$\text{Annual Repayment of Loan} = \frac{₹\,5,00,000}{5.773} = ₹\,86,610$$

Year	Installment (Interest + Principal)	Principal Amount	Annual Interest	Principal component
	(₹)	(₹)	(₹)	(₹)
0	86,610	4,13,390	-	86,610
1	86,610	3,88,789	62,009	24,601
2	86,610	3,60,497	58,318	28,292
3	86,610	3,27,962	54,075	32,535
4	86,610	2,90,546	49,194	37,416
5	86,610	2,47,518	43,582	43,028
6	86,610	1,98,036	37,128	49,482
7	86,610	1,41,131	29,705	56,905
8	86,610	75,691	21,170	65,440
9	86,610	-	10,919*	75,691

* Balancing Figure

Tax benefit on interest and depreciation

Year	Interest	Depreciation	Total	Tax Shield
	(₹)	(₹)	(₹)	(₹)
0	-	-	-	-
1	62,009	50,000	1,12,009	33,603
2	58,318	50,000	1,08,318	32,495
3	54,075	50,000	1,04,075	31,223
4	49,194	50,000	99,194	29,758
5	43,582	50,000	93,582	28,075
6	37,128	50,000	87,128	26,138
7	29,705	50,000	79,705	23,912

8	21,170	50,000	71,170	21,351
9	10,919	50,000	60,919	18,276
10	-	50,000	50,000	15,000

(iv) The present value of comparative tax benefits i.e. the operating advantage/disadvantage is calculated below:

End of Year	Tax shield on lease	Tax shield on borrowing	Incremental savings	PVF @ 12%	PV
	(₹)	(₹)	(₹)		(₹)
1	22,186	33,603	(11,417)	0.893	(10,195)
2	22,186	32,495	(10,309)	0.797	(8,216)
3	22,186	31,223	(9,037)	0.712	(6,434)
4	22,186	29,758	(7,572)	0.636	(4,816)
5	22,186	28,075	(5,889)	0.568	(3,345)
6	22,186	26,138	(3,952)	0.507	(2,004)
7	22,186	23,912	(1,726)	0.453	(782)
8	22,186	21,351	835	0.404	337
9	22,186	18,276	3,910	0.361	1,412
10	22,186	15,000	7,186	0.322	2,314
					(31,729)

Since the financial advantage exceeds the operating advantage, it is advisable to go for **leasing.**

(b) (i) Suppose we have to borrow $ 1,000. The outflow under the two options shall be as follows:

If borrowing is made in US

	$
Principal amount	1,000
Interest $\left(\$1,000 \times \dfrac{90}{360} \times 4\% \right)$	10
Outflow	1010

If borrowing is made in Can $

	Can $
Equivalent Can $	1,240
Interest $\left(\text{Can } \$ 1,240 \times \dfrac{90}{360} \times 4.5\% \right)$	13.95
Outflow	1,253.95

Conversion @ forward rates = $\dfrac{\text{Can\$ }1,253.95}{1.255}$ = \$ 999.16

Since US\$ outflow is least in Can \$, the borrowings should be made in Can \$.

(ii)

If money is lent in US \$

	\$
Amount lent	1,000
Interest $\left(\$1,000 \times \dfrac{90}{360} \times 2.5\% \right)$	6.25
	1,006.25

If money is lent in Can \$

	Can \$
Equivalent amount lent in Can \$	1,235
Interest $\left(\text{Can \$ }1,235 \times \dfrac{90}{360} \times 3.5\% \right)$	10.81
	1,245.81

Equivalent inflow in US \$ = $\dfrac{\text{Can \$ }1,245.81}{1.260}$ = \$ 988.74

Since inflow is least in Can \$, amount should invest in US \$.

Thus, borrowing should be made in Canadian \$ and lending should be made in US\$.

Question 6

(a) *M/s. A Ltd. is planning to import an equipment from japan at a cost of 3,400 lakh yens. The company may avail loans at 18% p.a. interest with quarterly rests with which it can import the said equipment. The company has also an offer from Osaka branch of an Indian bank extending credit of 180 days at 2% p.a. against opening of an irrevocable letter of credit (L/C).*

Additional information:

Present Exchange Rate   ₹ 100 = 340 yen

180 days forward rate   ₹ 100 = 345 yen

Commission charges for L/C at 2% per 12 months.

Advice whether the company should accept the offer.   ***(8 Marks)***

(b) *The credit sale and receivables of M/s. X Ltd. at the end of the year are estimated at ₹ 4,00,00,000 and ₹ 50,00,000 respectively. The average variable overdraft interest rate*

is 5% X Ltd. is considering a proposal for assigning to a Factor, the collections of its debts on a non-recourse basis at an annual fee of 3% on credit sales. As a result, X Ltd. will save ₹ 100,000 per year in its administrative cost and ₹ 3,50,000 for its bad debts. The factor will maintain a receivable collection period of 30 days and advance 80% of the face value thereof at an annual interest rate of 7% Evaluate the viability of proposal.

Assume 365 day in a year.   **(8 Marks)**

Answer

(a)   Option I (To finance the purchases by availing loan at 18% per annum):

Cost of equipment	₹ in lakhs
3400 lakh yen at ₹100 = 340 yen	1,000.00
Add: Interest at 4.5% I Quarter	45.00
Add: Interest at 4.5% II Quarter (on ₹1045 lakhs)	47.03
Total outflow in Rupees	1,092.03
Alternatively, interest may also be calculated on compounded basis, i.e., ₹1000 × [1.045]²	₹1092.03

Option II (To accept the offer from foreign branch):

Cost of letter of credit	
At 1 % on 3400 lakhs yen at ₹100 = 340 yen	₹ 10.00 lakhs
Add: Interest for 2 Quarters	₹ 0.90 lakhs
(A)	₹ 10.90 lakhs
Payment at the end of 180 days: Cost	3400.00 lakhs yen
Interest at 2% p.a. [3400 × 2/100 × 180/365]	33.53 lakhs yen
	3433.53 lakhs yen
Conversion at ₹100 = 345 yen [3433.53 / 345 ×100] (B)	₹ 995.23 lakhs
Total Cost: (A) + (B)	₹ 1006.13 lakhs

Advise: Option 2 is cheaper by (1092.03 – 1006.13) lakh or ₹ 85.90 lakh. Hence, the offer may be accepted.

(b)

Particulars	₹
Estimated Receivables	50,00,000
Estimated Receivables under Factor $\left(4,00,00,000 \times \dfrac{30}{365} \right)$	32,87,671
Reduction in Receivables (₹ 50,00,000 – ₹ 32,87,671)	17,12,329

Total Savings (A)

Reduction in finance costs ₹ 17,12,329 @ 5%	85,616
Saving of Administration costs	1,00,000
Saving of Bad debts	3,50,000
Total	5,35,616

Total Cost of Factoring (B)

Interest on advances by Factor	
Advances ₹32,87,671 @ 80% ₹ 26,30,137	
Interest on ₹ 26,30,137 @ 7% ₹ 1,84,109	
Overdraft Interest rate 5% (₹ 1,31,507)	52,602
Charges payable to Factor (₹ 4,00,00,000 @ 3%)	12,00,000
Total	12,52,602

Net Saving (A) – (B)   (7,16,986)

Since Net Saving is negative the proposal is **not viable** and cannot be accepted.

Question 7

*Answer any **four** of the following:*

(a) *What is take over by reverse bid or reverse merger?*

(b) *Write a short note on Euro Convertible Bonds.*

(c) *Explain the different levels of strategy.*

(d) *Write any four differences between "Systematic risk" and "Unsystematic risk"*

(e) *State the assumptions of Black-Scholes model.*   **(4 x 4 = 16 Marks)**

Answer

(a) Generally, a big company takes over a small company. When the smaller company gains control of a larger one then it is called "Take-over by reverse bid". In case of reverse take-over, a small company takes over a big company. This concept has been successfully followed for revival of sick industries.

The acquired company is said to be big if any one of the following conditions is satisfied:

(i) The assets of the transferor company are greater than the transferee company;

(ii) Equity capital to be issued by the transferee company pursuant to the acquisition exceeds its original issued capital, and

(iii) The change of control in the transferee company will be through the introduction of minority holder or group of holders.

Reverse takeover takes place in the following cases:

(1) When the acquired company (big company) is a financially weak company

(2) When the acquirer (the small company) already holds a significant proportion of shares of the acquired company (small company)

(3) When the people holding top management positions in the acquirer company want to be relived off of their responsibilities.

The concept of take-over by reverse bid, or of reverse merger, is thus not the usual case of amalgamation of a sick unit which is non-viable with a healthy or prosperous unit but is a case whereby the entire undertaking of the healthy and prosperous company is to be merged and vested in the sick company which is non-viable.

(b) They are bonds issued by Indian companies in foreign market with the option to convert them into pre-determined number of equity shares of the company. Usually price of equity shares at the time of conversion will fetch premium. The Bonds carry fixed rate of interest.

The issue of bonds may carry two options:

Call option: Under this the issuer can call the bonds for redemption before the date of maturity. Where the issuer's share price has appreciated substantially, i.e., far in excess of the redemption value of bonds, the issuer company can exercise the option. This call option forces the investors to convert the bonds into equity. Usually, such a case arises when the share prices reach a stage near 130% to 150% of the conversion price.

Put option: It enables the buyer of the bond a right to sell his bonds to the issuer company at a pre-determined price and date. The payment of interest and the redemption of the bonds will be made by the issuer-company in US dollars.

(c) Strategies at different levels are the outcomes of different planning needs. There are basically three types of strategies:

(i) Corporate Strategy: At the corporate level planners decide about the objective or objectives of the firm along with their priorities and based on objectives, decisions are taken on participation of the firm in different product fields. Basically a corporate strategy provides with a framework for attaining the corporate objectives under values and resource constraints, and internal and external realities. It is the corporate strategy that describes the interest in and competitive emphasis to be given to different businesses of the firm. It indicates the overall planning mode and propensity to take risk in the face of environmental uncertainties.

(ii) Business Strategy: It is the managerial plan for achieving the goal of the business unit. However, it should be consistent with the corporate strategy of the firm and should be drawn within the framework provided by the corporate planners. Given the overall competitive emphasis, business strategy specifies the product market power i.e. the way of competing in that particular business activity. It also addresses

coordination and alignment issues covering internal functional activities. The two most important internal aspects of a business strategy are the identification of critical resources and the development of distinctive competence for translation into competitive advantage.

(iii) Functional Strategy: It is the low level plan to carry out principal activities of a business. In this sense, functional strategy must be consistent with the business strategy, which in turn must be consistent with the corporate strategy. Thus strategic plans come down in a cascade fashion from the top to the bottom level of planning pyramid and performances of functional strategies trickle up the line to give shape to the business performance and then to the corporate performance.

(d) Differences between Systematic Risk and Unsystematic Risk

S. No.	Systematic Risk	Unsystematic Risk
1.	Refers to the variability of return on stocks or portfolio associated with changes in return on the market as a whole.	Refers to risk unique to a particular company or industry.
2.	It arises due to risk factors that affect the overall market such as changes in the nation's economy, tax reform by the Government or a change in the world energy situation.	It arises due to risk factors that are particular to any company or industry.
3.	Since this affects securities overall and consequently, cannot be diversified away.	This risk can be virtually eliminated from a portfolio through diversification.
4.	Beta is a measure of Systematic Risk.	Standard Deviation is a measure of Systematic Risk.

(e) Assumptions of Black Scholes 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.