QUESTION : 1 (a)

An investor is holding 1,000 shares of X Ltd.; Current Year dividend rate is Rs 3 per share. Market price of the share is Rs 35 each. The investor is concerned about several factors which are likely to change during the next financial year as indicated below:

Particulars	Current Year	Next Financial Year
Dividend paid/anticipated per share (Rs)	3.00	3.25
Risk Free Rate	11%	12%
Market Risk Premium	4%	5%
Beta Value	1.5	1.6
Expected growth	8%	10%

Advise the investor to take further action, whether to BUY, HOLD or SELL the shares, based on the above information.

(6 Marks)

SOLUTION : 1 (a)

On the basis of existing and revised factors, rate of return and price of share is to be calculated.

Existing rate of return

= R_f + Beta (R_m - R_f) = 11% + 1.5 (4%) = 17%

Revised rate of return

= 12% + 1.6 (5%) = 20%

Price of share (original)

$$Po = \frac{Do(1+g)}{Ke-g} = \frac{3(1+0.08)}{0.17-0.08} = 36$$

Price of share (Revised)

$$Po = \frac{D1}{Ke-g} = \frac{3.25}{0.20-0.10} = 32.50$$

Comment - In case of existing market price of Rs 35 per share, rate of return (17%) and possible equilibrium price of share at Rs 36, this share needs to be bought because the share is under-priced.

Under the changed scenario, growth of dividend has been revised at 10%, the return has increased at 20% and the possible price of share is to be at Rs 32.50. Therefore, the investor should sell the shares, as price is expected to decrease, if other things remain the same.

*****

QUESTION : 1 (b)

Mr. Kar has invested in three mutual fund schemes as per details below:

	MFX	MFY	MFZ
Amount of investment (Rs)	5,50,000	4,20,000	1,00,000
Dividend received up to 31.03.2023 (Rs)	10,000	6,000	Nil
NAV as on 31.03.2023 (Rs)	11.50	11.00	9.50
Effective yield p.a. as on 31.03.2023	19.345%	22.59%	-36.50%

Holding period	120 days	100 days	50 days

You are required to calculate Net Asset Value (NAV) at the time of purchase assuming 365 days in a year.

(4 Marks)

SOLUTION 1(b)

Calculation of NAV at the time of purchase:

$$\text{Effective yield \% p.a} = \frac{\text{Dividend} + (\text{Closing NAV x No.of units} - \text{Amount invested})}{\text{Amount Invested}} \times \frac{365}{\text{Holding period}}$$

Let the no. of units be X

1. MFX

$$0.19345 = \frac{10,000 + (11.50 \times X - 5,50,000)}{5,50,000} \times \frac{365}{120}$$

X = 50,000 units (Approx)
NAV at the time of purchase = 5,50,000 / 50,000 = Rs 11

2. MFY

$$0.2259 = \frac{6,000 + (11 \times X - 4,20,000)}{4,20,000} \times \frac{365}{100}$$

X = 40,000 units (Approx)
NAV at the time of purchase = 4,20,000 / 40,000 = Rs 10.50

3. MFZ

$$-0.365 = \frac{0 + (9.50 \times X - 1,00,000)}{1,00,000} \times \frac{365}{50}$$

X = 10,000 units (Approx)
NAV at the time of purchase = 1,00,000 / 10,000 = Rs 10

*****

QUESTION : 1 (c)

 "The starting point of an organisation is money and the end point of that organization is also money". Explain the statement to clearly understand this interface of strategic management and financial policy.

(4 Marks)

SOLUTION 1 (c)

No organization can run an existing business and promote a new expansion project without a suitable internally mobilized financial base or both i.e. internally and externally mobilized financial base.
Sources of finance and capital structure are the most important dimensions of a strategic plan.

The generation of funds may arise out of ownership capital and or borrowed capital. A company may issue equity shares and/or preference shares for mobilizing ownership capital and debentures to raise borrowed capital. Public deposits, for a fixed time period, have also become a major source of short and medium term finance. Organizations may offer higher rates of interest than banking institutions to attract investors and raise fund. The overdraft, cash credits, bill discounting, bank loan and trade credit are the other sources of short term finance.

Along with the mobilization of funds, policy makers should decide on the capital structure to indicate the desired mix of equity capital and debt capital. There are some norms for debt equity ratio which need to be followed for minimizing the risks of excessive loans. For instance, in case of public sector organizations, the norm is 1:1 ratio and for private sector firms, the norm is 2:1 ratio. However this ratio in its ideal form varies from industry to industry. For capital intensive industries, the proportion of debt to equity is much higher.

Another important dimension of strategic management and financial policy interface is the investment and fund allocation decisions. A planner has to frame policies for regulating investments in fixed assets and for restraining of current assets.

*****

QUESTION : 2 (a)

The Closing values of NSE Nifty from 2nd January, 2024 to 11th January, 2024 were as follows:

Days	Date	Day	Nifty
1	2	TUE	21,742
2	3	WED	21,665
3	4	THU	21,517
4	5	FRI	21,462
5	6	SAT	No Trading
6	7	SUN	No Trading
7	8	MON	21,238
8	9	TUE	21,182
9	10	WED	20,997
10	11	THU	20,926
11	12	FRI	20,901

You are required to:

(i)   Calculate Exponential Moving Average (EMA) of Nifty during the above period. The previous day exponential moving average of Nifty can be assumed as 21,500. The value of exponent for 31st Days EMA is 0.062.

(ii)   Give brief analysis on the basis of your calculations.   **(6 Marks)**

SOLUTION 2 (a):

Calculation of EMA

Date	1 NIFTY	2 EMA for Previous day	3 1-2	4 3x0.062	5 EMA 2 + 4
2	21,742	21500	242	15.004	21515
3	21,665	21515	150	9.299752	21524.3
4	21,517	21524.3	-7	-0.45283	21523.85
5	21,462	21523.85	-62	-3.83476	21520.02
8	21,238	21520.02	-282	-17.485	21502.53
9	21,182	21502.53	-321	-19.8729	21482.66
10	20,997	21482.66	-486	-30.1108	21452.55
11	20,926	21452.55	-527	-32.6459	21419.9
12	20,901	21419.9	-519	-32.1719	21387.73

Conclusion - The market is. The market is likely to remain bearish for short term to medium term if other factors remain the same. On the basis of this indicator (EMA) the investors/brokers can take short position.

*****

QUESTION : 2 (b)

XY Ltd., is interested in expanding its operation and planning to install a unit at US. For the proposed project, it requires a fund of $ 15 million (net of issue expenses/floatation cost). The estimated floatation cost is 3%. To finance the project, it proposes to issue GDRs.

You as a financial consultant is required to compute the number of GDRs to be issued and cost of the GDR with the help of following additional information.

(i)   Expected market price of share at the time of issue of GDR is Rs 350

        (Face Value 100).

(ii) **3 shares shall underly each GDR and shall be priced at 6% discount to market price.**

(iii) **Expected Exchange Rate Rs 84 / $.**

(iv) **Dividend expected to be paid is 10% with growth rate of 8%.** **(4 Marks)**

SOLUTION 2 (b):

Net Issue Size = $15 million

Floatation cost = 3%

Gross Issue $= \frac{\$15 million}{0.97} = \$15.463918$ million

Issue Price per GDR in Rs. (350 x 3 x 94%) =   Rs. 987

Issue Price per GDR in $ = Rs. 987/ 84 = $11.75

Dividend Per GDR (Di) = Rs. 100 X 10% x 3 =   Rs. 30

Net Proceeds Per GDR = Rs. 987 x 0.97 = Rs. 957.39

(a) **Number of GDR to be issued -**

$$= \frac{\$15.463918 \text{ million}}{\$11.75} = 1.3161 \text{ million}$$

(b) **Cost of GDR**

$$k_e = \frac{30}{957.39} + 0.08 = 11.13\%$$

*****

QUESTION : 2 (c)

Mr. A, has invested in the Growrich Mutual Fund's Scheme. The details of the Mutual Fund Scheme are given below:

Asset Value at the beginning of the month	Rs 78.50
Annualized Return	16%
Distribution made in the nature of Income and Capital Gain (per unit respectively)	Rs 0.40 & Rs 0.30

You are required to :

(i) **Calculate the month end Net Asset Value of the Growrich Mutual Fund Scheme (Round off to 2 decimals)**

(ii) **Comment briefly on the Month end NAV.** **(4 Marks)**

SOLUTION 2 (c):

Calculation of Month-end NAV :

Annualised return % $= \frac{\text{Dividend +capital gain distribution+(Closing NAV−Opening NAV)}}{\text{Opening NAV)}} \times \frac{12}{\text{Holding period}}$

Let Closing NAV be X

$0.16 = \frac{0.40 + 0.30 + (X−78.50)}{78.50} \times \frac{12}{1}$

X = Rs 78.85

Comment - The month-end NAV is higher by Rs 0.35 (i.e 78.85 – 78.50). It shows there has been appreciation in portfolio held by mutual fund.

*****

QUESTION : 3 (a)

A manufacturer of electronic components has taken floating interest rate loan of Rs 2 Crore on 1st April, 2023. The rate of interest at the inception of loan is 9% per annum. Interest is to be paid every year on 31st March.

In the month of October 2023, the Central Bank of the country releases the following projections about the interest rates

likely to prevail in future.

i. **On 31st March, 2024 - 9.25%**

    On 31st March 2025   -   9.50%

    On 31st March, 2026 -   10.00%

    On 31st March, 2027 -   9.00%

    On 31st March, 2028 -   8.25%

    You are required to show how the borrower can hedge the risk using Option Cap arising out of expected rise in the rate of interest when he wants to peg his interest cost at 9% per annum.

ii. **Assume that the premium negotiated by both the parties is 0.80% t0 be paid at once on 1st October, 2023 and the actual rate of interest on the respective due dates happens to be as:**

    On 31« March, 2024 -9.50%

    On 31st March, 2025 -11.00%

    On 31st March, 2026 - 9.25%

    On 31st March, 2027 - 9.00%

    On 31st March, 2028 - 8.50%

    You are required to show how the settlement will be executed on the perspective interest due dates.

. (iii) State whether this option is advantageous when compared to Interest Rate Collar option. Explain.

(10 Marks)

SOLUTION 3 (a):

As borrower does not want to pay more than 9% p.a., on this loan where the rate of interest is likely to rise beyond this, hence, he has hedge the risk by entering into an agreement to buy interest rate caps with the following parameters:

➭ National Principal : Rs 2,00,00,000/-

➭ Strike rate: 9% p.a.

➭ Reference rate : the rate of interest applicable to this loan

➭ Calculation and settlement date : 31st March every year

➭ Duration of the caps : till 31st March 2028

➭ Premium for caps : negotiable between both the parties

To purchase the caps this borrower is required to pay the premium upfront at the time of buying caps. The payment of such premium will entitle him with right to receive the compensation from the seller of the caps as soon as the rate of interest on this loan rises above 8.5%. The compensation will be at the rate of the difference between the rate of none of the cases the cost of this loan will rise above 9% calculated on Rs 2,00,00,000/-. This implies that in none of the cases the cost of this loan will rise above 9%. This hedging benefit is received at the respective interest due dates at the cost of premium to be paid only once.

The premium to be paid on 1st October 2012 is 1,60,000/- (2,00,00,000 x 0.80%). The payment of this premium will entitle the buyer of the caps to receive the compensation from the seller of the caps whereas the buyer will not have obligation. The compensation received by the buyer of caps will be as follows:

On 31st March 2024

The buyer of the caps will receive the compensation at the rate of 0.50% (9.50 - 9) to be calculated on Rs 2,00,00,000, the amount of compensation will be Rs 1,00,000/- (i.e 2,00,00,000 x 0.5%)

On 31 st March 2025

The buyer of the caps will receive the compensation at the rate of 2.00% (11 - 9) to be calculated on Rs 2,00,00,000/-, the amount of compensation will be Rs 4,00,000/- (2,00,00,000 x 2%).

On 31st March 2026

The buyer of the caps will receive the compensation at the rate of 0.25% (9.25 - 9) to be calculated on Rs 2,00,00,000/-, the amount of compensation will be Rs 50,000 (2,00,00,000 x 0.25%).

On 31st March 2027

The buyer of the caps will not receive the compensation as the actual rate of interest is 9% whereas strike rate of caps is also 9%. Hence, his interest   liability shall not exceed 9%.

On 31st March 2028

The buyer of the caps will not receive the compensation as the actual rate of interest is 8.5% whereas strike rate of caps is 9%. Hence, his interest liability shall not exceed 9%.

Thus, by paying the premium upfront buyer of the caps gets the compensation on the respective interest due dates without any obligations.

> **Interest rate options provide more flexibility compared to interest rate collars.** With options, the buyer has the right but not the obligation to execute the trade at a predetermined rate. This means that if market conditions change favorably, the buyer can choose not to exercise the option and pursue more advantageous opportunities. Interest rate collar limits potential gains if interest rates move in a favourable direction.

*****

QUESTION : 3 (b)

Apart from the support from government, there are quite a few other reasons why India became a sustainable environment for start-up to thrive in. What are the other reasons? **(4 Marks)**

SOLUTION 3(b) :

INDIA BECAME SUCH A SUSTAINABLE ENVIRONMENT FOR START-UPS TO THRIVE IN
Some of the major reasons are:

I. **The Pool of Talent –**
- Our country has a big pool of talent.
- There are millions of students graduating from colleges and B-schools every year.
- Many of these students use their knowledge and skills to begin their own ventures, and that has contributed to the startup growth in India.
- In the past, much of this talent was attracted to only the big companies, but now that is slowly changing.

II. **Cost Effective Workforce –**
- India is a young country with over 10 million people joining the workforce every year.
- The workforce is also cost effective.
- Compared to some other countries, the cost of setting up and running a business is comparatively lower.

III. **Increasing use of the Internet –**
- After the introduction of affordable telecom services, the usage of internet has increased significantly.
- It has even reached the rural areas.
- India has the second-largest internet user base after China.
- Companies as well as start-ups are leveraging this easy access to the internet.

IV. **Technology –**
- Technology has made the various processes of business very quick, simple and efficient.
- Major developments in software and hardware systems
- Data storage and recording has become an easy task.
- Indian startups are now increasingly working in areas of artificial intelligence and blockchain technologies which is adding to the growth of businesses**.**

V. **Variety of Funding Options Available –**
- Earlier model - borrowing from the bank or borrowing from family and friends.
- Now - numerous options and opportunities available.
- Start-up owners can approach
    o angel investors,
    o venture capitalists,
    o seed funding stage investors, etc.
- The easing of Foreign Direct Investment norms and opening up of majority of sectors to 100% automatic route has also opened the floodgates for foreign funding in the Indian start-up ecosystem

OR

"Tokenization, to some extent resembles the process of Securitization."

Is it True? What are the similarities of Tokenization and Securitization? **(4 Marks)**

SOLUTION 3(b) (OR):

Similarities between Tokenization and Securitization:
- **Liquidity: -**

Securitization and Tokenization inject liquidity in the market for the assets which are otherwise illiquid assets.
- **Diversification: -**
  Both help investors to diversify their portfolio thus managing risk and optimizing returns.
- **Trading: -**
  Both are tradable hence helps to generate wealth.
- **New Opportunities: -**
  Both provide opportunities for financial institutions and related agencies to earn income through collection of fees.

*****

QUESTION : 4 (a)

The Market received some information about ABC Ltd.'s tie up with a Multinational Company. This has induced the market price to move-up. If the information is false, the ABC Ltd.'s stock price will probably fall dramatically, To protect from this, an investor has bought the call and put options.

He purchased one 3 month's call with a striking price of Rs 45 for Rs 3 premium and paid Rs 2 per share premium for a 3 month's put with a striking Price of Rs 42.

Assume 100 shares for call and put option.

You are required:

(i) To determine the investor's position if the tie up offer bids the price of ABC Ltd.'s stock up to Rs 44 in 3 months.

(ii) To determine the investor's position if the tie up offer program fails and the price of the stocks falls to Rs 34 in 3 months.

(iii) To determine the investor's position if the tie up offer program is successful and the price of the stocks rise up to Rs 46 in 3 months.

(6 Marks)

SOLUTION 4(a):

Step 1 : Total premium paid on purchasing a call and put option

= (Rs.3 per share x 100) + (Rs.2 per share x 100).

= 300 + 200 = Rs.500

(i) Price goes to Rs 44.

In this case, Investor exercises neither the call option nor the put option as both will result in a loss for him.

Ending Value = -Rs.500 + Zero gain

= -Rs.500

i.e. Net loss = Rs. 500

(ii) Price goes to Rs 34.

Since the price of the stock is below the exercise price of the call, the call will not be exercised. Only put is valuable and is exercised.

Total premium paid = Rs.500

Ending Value = -Rs.500 + Rs.[(42 – 34) x 100]

= -Rs.500 + Rs.800 = Rs.300

∴ Net gain = Rs.300

(iii) Price goes to Rs 46.

In this situation, the put is worthless, since the price of the stock exceeds the put's exercise price. Only call option is valuable and is exercised.

Total premium paid = Rs.500

Ending value = -500 + [(46 – 45) x 100]

Net Loss = -500 + 100 = - Rs.400.

*****

QUESTION : 4 (b)

PQ Ltd., plans to acquire RS Ltd. The relevant financial details of the two firms prior to the merger announcement are :

	PQ Ltd.,	RS Ltd,
Market price per share	₹ 100	₹ 50
Number of outstanding shares	20,00,000	10,00,000

The merger is expected to generate gains which have a present value of 300 lakhs. The exchange ratio agreed to is 0.5.

You are required to calculate the true cost of the merger from the point of view of PQ Ltd. **(4 Marks)**

SOLUTION 4 (b) :

Shareholders of RS Ltd. will get 5 lakh share of PQ Limited, so they will get:

$$= \frac{5 \text{ Lakh}}{20 \text{ Lakh} + 5 \text{ Lakh}} = 20\% \text{ of shares PQ Limited}$$

The value of PQ Ltd. after merger will be:

= Rs. 100 x 20 lakh + Rs. 50 x 10 lakh + Rs. 300 lakh

= Rs. 2000 lakh + Rs. 500 lakh + Rs. 300 lakh = Rs. 2800 lakh

True Cost of Merger will be:

(2800 x 20%) - 500 lakhs = Rs. 60 lakhs

*****

QUESTION : 4 (c)

What do you mean by International Financial Centre (Gift City) ? What are the benefits of IFC ?

(4 Marks)

SOLUTION 4 (c):

International Financial Centre (IFC) is the financial center that caters to the needs of the customers outside their own jurisdiction. Broadly, speaking IFC is a hub that deals with flow of funds, financial products and financial services even though in own land but with different set of regulations and laws.

Thus, **these centers provide flexibility in currency trading, insurance, banking and other financial services.** This flexible regime attracts foreign investors which is of potential benefit not only to the stakeholders but as well as for the country hosting IFC itself.

Benefits of IFC

There are numberless direct and indirect benefits of setting up IFC but some major benefits emanating from establishing IFC are as follows:

(i) **Opportunity for qualified professionals** working outside India come here and practice their profession.
(ii) **A platform for qualified and talented professionals to pursue global opportunities** without leaving their homeland.
(iii) **Stops Brain Drain** from India.
(iv) **Bringing back those financial services transactions presently carried out abroad by overseas financial institutions/entities** or branches or subsidiaries of Indian Financial Market.
(v) **Trading of complicated financial derivative can be started from India.**

*****

QUESTION : 5 (a)

An investor has decided to invest Rs. 1,00,000 in the shares of X Ltd. and Y Ltd. The desired returns from the shares of the two companies along with their probabilities are as follows:

Probability	X Ltd (%)	Y Ltd (%)
0.20	-5	15
0.50	10	. 25
0.30	15	-10

You are required to :

(i)   Calculate the risk and return of investment in individual shares.

(ii)   Compare the risk and return of these two shares with a portfolio of these shares in equal proportions.

(iii)   Find out the proportion of each of the above shares to formulate a minimum risk portfolio.

(8 Marks)

SOLUTION 5 (a):

Calculation of Expected return, Standard Deviation and Covariance

Prob (P)	X	Y	P.X	P.Y	$(X - \overline{X})$	$(Y - \overline{Y})$	$P(X - \overline{X})^2$	$P(Y-\overline{Y})^2$	$P(X - \overline{X})(Y-\overline{Y})$
0.20	-5	15	-1	3	-13.5	2.5	36.45	1.25	- 6.75
0.50	10	25	5	12.5	1.5	12.5	1.125	78.125	9.375
0.30	15	-10	4.5	-3	6.5	-22.5	12.675	151.875	- 43.875
			8.5	**12.5**			**50.25**	**231.25**	**Cov = - 41.25**
							σ = 7.09	**σ = 15.21**	

Return on Stock X = 8.5%
Return on Stock Y = 12.5%
Risk (Standard Deviation) of Stock X = 7.09%
Risk (Standard Deviation) of Stock Y = 15.21%
Covariance = - 41.25 %^{2}
For equally weighted portfolio,

- **Expected Portfolio return** = (0.5 x 8.5) + (0.5 x 12.5) = 10.5%

Standard deviation of portfolio = $\sqrt{WXA^2\sigma_A{}^2 + WB^2\sigma_B{}^2 + 2.WA.WB.Cov(A,B)}$

$$= \sqrt{(0.5)^2(7.09)^2 + (0.5)^2(15.21)^2 + 2x0.5x0.5\ x\ (-)41.25}$$

$$= 7.06\%$$

$$W_x = \frac{\sigma^2{}_y - Cov\,(x,y)}{\sigma^2{}_x + \sigma^2{}_y - 2\,Cov\,(x,y)} = \frac{231.25-(-41.25)}{50.25+231.25-2\,(-41.25)} = 0.7486 = 74.86\%$$

W_Y = 1 - 0.7486 = 0.2514 = 24.14%

*****

QUESTION : 5 (b)

XY Ltd., paid a dividend of Rs 3, for the current year. The dividend is expected to grow at 30% for foe next 5 years and at 15% per. annum hereafter. The return on 182 days T-bills is 12% per annum and the market return is expected to be around 16% with a variance of24%.

The Co-Variance of XY's return with that of the market value is 30%.

You are required to:

(i)   Calculate the Required Rate of Return

(ii)   Calculate the Intrinsic Value of the Stock
        The PVF at 17% is given below:

Year	1	2	3	4	5
PVF(17%)	0.855	0.731	0.624	0.534	0.456

(6 Marks)

SOLUTION 5 (b):

Step 1 : Beta (β) $= \dfrac{\text{Cov }(R_j . R_m)}{\text{Var}_{Rm}} = \dfrac{30}{24} = 1.25$

Step 2 : Required rate of return = Rf + B (Rm-Rf)

= 12 + 1.25 (16 -12) = 17%

Step 3 - Calculation of Intrinsic Value of Shares

Year	Cash flow (Rs)	PVF@ 17%	PV (Rs)
1	$3 (1.30)^1 = 3.90$	0.855	3.3345
2	$3 (1.30)^2 = 5.07$	0.731	3.70617
3	$3 (1.30)^3 = 6.591$	0.624	4.112784
4	$3 (1.30)^4 = 8.5683$	0.534	4.575472
5	$3 (1.30)^5 = 11.1388$	0.456	5.079288
			20.80821
Terminal Value (P5)	640.481 (WN 1)	0.456	**292.0593**
Intrinsic Value			**312.86751**

$$WN\ 1 - TV = \dfrac{11.1388(1.15)}{0.17 - 0.15} = 640.481$$

*****

QUESTION : 6 (a)

A machine used on a production line must be replaced at least every four years. Costs incurred to run the machine according to its age are:

Age of the Machine (Years)					
	0	1	2	3	4
Purchase price (in ₹)	1,00,000				
Maintenance (in ₹)		18,000	20,000	22,000	24,000
Repairs (in ₹)		0	3,000	6,000	10,000
Scrap Value (in ₹)		35,000	23,000	12,000	6,000

Future replacement will be with identical machine having same cost, Revenue is unaffected by the age of the machine. Ignore Inflation and tax and determine the optimum replacement cycle.

PV factors of the cost of capital of 15% for the respective four years are:

Year	I	2	3	4
PVF(15%)	0.8696	0.7561	0.6575	0.5718

(8 Marks)

SOLUTION 6 (a):

Step 1 : Calculation of EAC for one year Replacement Cycle.

Year	Particulars	Cashflow	PV Factor@ 15%	PV (₹)
0	Cost of Machine	(1,00,000)	1	(1,00,000)
1	Repair & Maintenance	(18,000)	0.8696	(15,653)
1	Residual Value	35,000	0.8696	30436
	NPV			(85,217)
	PVAF			0.8696
	EAC			**(97,996)**

Step 2 : Calculation of EAC for two year Replacement Cycle.

Year	Particulars	Cashflow	PV Factor@ 15%	PV (₹)
0	Cost of Machine	(1,00,000)	1	(1,00,000)

1	Repair & Maintenance	(18,000)	0.8696	(15,653)
2	Repair & Maintenance	20,000 + 3,000 = (23,000)	0.7561	(17,390)
2	Residual Value	23,000	0.7561	17,390
	NPV			(115,653)
	PVAF			1.6257
	EAC			**(71,140)**

Step 3: Calculation of EAC for three year Replacement Cycle.

Year	Particulars	Cashflow	PV Factor@ 15%	PV (₹)
0	Cost of Machine	(1,00,000)	1	(1,00,000)
1	Repair & Maintenance	(18,000)	0.8696	(15,653)
2	Repair & Maintenance	20,000 + 3,000 = (23,000)	0.7561	(17,390)
3	Repair & Maintenance	22,000+6,000 = (28,000)	0.6575	(18,410)
3	Residual Value	12,000	0.6575	7890
	NPV			(143,563)
	PVAF			2.2832
	EAC			**(62,878)**

Step 4: Calculation of EAC for four year Replacement Cycle.

Year	Particulars	Cashflow	PV Factor@ 15%	PV (₹)
0	Cost of Machine	(1,00,000)	1	(1,00,000)
1	Repair & Maintenance	(18,000)	0.8696	(15,653)
2	Repair & Maintenance	20,000 + 3,000 = (23,000)	0.7561	(17,390)
3	Repair & Maintenance	22,000 + 6,000 = (28,000)	0.6575	(18,410)
4	Repair & Maintenance	24,000 + 10,000 = (34,000)	0.5718	(19,441)
4	Residual Value	6,000	0.5718	3431
	NPV			(1,67,463)
	PVAF			2,855
	EAC			**58,656**

Decision – Since EAC is least in case of replacement cycle of 4 years. Machine should be replaced after every 4 years.

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QUESTION : 6 (b)

The equity shares of XYZ Ltd., are currently being traded at Rs 34 per share in the market.

XYZ Ltd., has total 10,00,000 equity shares outstanding in number and promoters equity holding in the company is 30%.

ABC Ltd., wishes to acquire XYZ Ltd., because of likely synergies. The estimated present value of these synergies is Rs 1,00,00,000.

Further ABC Ltd., feels that management of XYZ Ltd., has been overpaid. With better motivation, lower salaries and fewer perks for the top management, will lead to savings of Rs 5,00,000 per annum, Top management with their families are promoters of XYZ Ltd,, Present value of these savings would add Rs 25,00,000 in value to the acquisition.

Following additional information is available regarding ABC Ltd.,

Earnings per share	Rs 5
Total number of shares outstanding	15,00,000
Market price of equity share	Rs30

You are required to :

(i) Calculate the maximum price per equity share which ABC Ltd., can offer to pay for XYZ Ltd.

(ii) Calculate the minimum price per equity share at which the management of XYZ Ltd., will be willing to offer their controlling interest. **(6 Marks)**

SOLUTION 6 (b):

Step 1 - Maximum Price per equity share which ABC Ltd can offer to pay for XYZ Ltd

	Rs
Market Value (10,00,000 x 34)	340,00,000
Synergy Gain	100,00,000
Saving of Overpayment	25,00,000
	4,65,00,000
Maximum Price per equity share which ABC Ltd can offer to pay for XYZ Ltd (4,65,00,000/10,00,000)	**46.50**

Alternatively, it can also be computed as follows:

Let Exchange Ratio be ER, then,

$$30 = \frac{34 \times 10,00,000 + 30 \times 15,00,000 + 100,00,000 + 25,00,000}{15,00,000 + 10,00,000 \times ER}$$

ER = 1.55

$$MP = PE \times EPS \times ER = \frac{30}{5} \times ₹ 5 \times 1.55 = 46.50$$

Step 2 : Calculation of minimum price per share at which the management of XYZ Ltd.'s will be willing to offer their controlling interest

	Rs
Value of XYZ Ltd.'s Management Holding (30% of 10,00,000 x 34)	1,02,00,000
Add: PV of loss of remuneration to top management	25,00,000
	1,27,00,000
No. of Shares (30% of 10,00,000)	3,00,000
Minimum Price at which the management of XYZ Ltd.'s will be willing to offer their controlling interest (1,27,00,000/3,00,000)	**42.33**

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About CA, CPA Vinod Kumar Agarwal

(AIR -2nd rank, 4th rank, and 24th rank in CA Foundation, CA Intermediate and CA Final respectively).

Summary:

Founder Member of A.S. Foundation, India's Leading Academy for C.A. Course, CA Vinod Kumar Agarwal is a fellow member of ICAI and a past member of the Board of Studies, ICAI. With a teaching experience of twenty one years, he has guided more than 1,00,000 students and is ranked as one of the best teachers for Accounts and Financial Management at Intermediate level and Financial Reporting and AFM at Final Level. He has authored books on Accounts, Advanced Auditing for CA Final, Auditing for Intermediate, Accounting Standards, Ind AS, Costing and Financial Management, and his books have sold more than 2,00,000 copies.

Education:

- Passed the **Certified Public Accountant (CPA) (USA)** exam in 2007.
- Post-graduation from Pune University with First Class.
- Graduation from B.M.C.C, Pune with distinction.
- Passed the Diploma in Business Finance Conducted by ICFAI, Hyderabad.
- Passed the Derivative Module test conducted by National Stock Exchange.
- **Also appeared for UPSC exam and cleared Mains twice.**

Teaching Experience:

- Teaches Accounts, Advanced Accountancy, Financial management and Economics for Finance at CA Intermediate Level and Financial Reporting and Advanced Financial Management (AFM) at CA Final level.
- Pioneer of creating and distributing video tutorials in pen drives/google drive among students.
- Produced All India Toppers (1st Rank) in CPT examination and final examination apart from more than 250 all India merit-holders.
- More than 30000 Facebook subscribers, more than 1,35,000 YouTube subscribers.
- Sold more than 40000 video lectures in pen-drive and google-drive mode.
- In 2019, launched a brand VKNOW, to become a national brand for digital learning.

Publications and Achievements:

- A **merit holder in all the three levels of exams conducted by ICAI** (2nd rank, 4th rank, and 24th rank in CA Foundation, CA Intermediate and CA Final respectively).
- **Scored 99 marks in Accountancy in CA Foundation.**
- Authored books on Accounts, Advanced Auditing for CA Final, Auditing for Intermediate, Accounting Standards, Ind AS, Costing and Financial Management.
- Complied a book "No Truth, Only Interpretations", a book on motivation, inspiration and guidance.
- Compiled a book, "Mind Candy", a book on motivation.
- Compiled a book, "Sweet Voice", a book on inspirational quotes.
- **Working experience** with India's top firms Firms like **M/s. S.B. Billimoria and A.F. Ferguson (both member firm of Deloitte).**
- Published article in the Students Newsletter of ICAI on "Valuation of Equity Shares" and "Stock Market Index".
- Presented a paper on "Corporate Governance and Role of Auditor" in National Students Conference held in Goa.

Teaching Approach:

- Simple and effective way of teaching through concept building, class-room practice, home-exercise, and power-point presentation.
- A large variety of problems are solved in the class to meet the examination requirements.
- Notes are updated frequently covering amendments and exam problems.