

Mock Test Paper - Series II: August, 2025

Date of Paper: 05th August, 2025

Time of Paper: 2 P.M. to 5 P.M.

FINAL COURSE: GROUP – I

PAPER – 2: ADVANCED FINANCIAL MANAGEMENT

Time Allowed – 3 Hours

Maximum Marks – 100

1. The question paper comprises two parts, Part I and Part II.
2. Part I comprises Case Scenario based Multiple Choice Questions (MCQs)
3. Part II comprises questions which require descriptive type answer

PART I – Case Scenario based MCQs (30 Marks)

Part I is compulsory.

Case Scenario I

XYZ Ltd. plans to invest ₹ 800,000 in a new unit. The project is expected to have a useful life of 4 years, with no salvage value at the end of its life. The annual depreciation charge for the project is ₹ 200,000.

Projected revenues and costs for the project, ignoring inflation, are provided as follows:

Year	Revenues (₹)	Costs (₹)
1	600,000	300,000
2	700,000	400,000
3	800,000	400,000
4	800,000	400,000

XYZ Ltd. is subject to a corporate tax rate of 60%, and the cost of capital for the project, including inflation premium, is 10%.

Depreciation provides a tax benefit, and inflation rates for revenues and costs over the project's lifespan are as follows:

Year	Revenue Inflation	Cost Inflation
1	10%	12%
2	9%	10%
3	8%	9%
4	7%	8%

From the information given above, choose the correct answer to the following questions:

1. The depreciation tax benefit for the project per year shall be.....
 - (a) ₹ 120,000
 - (b) ₹ 150,000
 - (c) ₹ 200,000
 - (d) ₹ 180,000
2. The inflation-adjusted revenue in Year 2 shall be.....
 - (a) ₹ 700,000
 - (b) ₹ 839,300
 - (c) ₹ 492,800
 - (d) ₹ 501,760
3. The total cash inflow in Year 1 after adjusting for inflation and tax benefit on depreciation shall be.....
 - (a) ₹ 330,000
 - (b) ₹ 336,000
 - (c) ₹ 249,600
 - (d) ₹ 492,800
4. The inflation-adjusted cost in Year 2 shall be.....
 - (a) ₹ 700,000
 - (b) ₹ 839,300
 - (c) ₹ 492,800
 - (d) ₹ 501,760
5. The present value of cash inflow for the year 3 shall be approximately.....
 - (a) ₹ 213,604
 - (b) ₹ 226,299
 - (c) ₹ 226,886
 - (d) ₹ 239,949

(5 x 2 = 10 Marks)

Case Scenario II

Suppose you are a risk manager at a financial institution, and your company has loaned a significant amount of ₹ 500 crore to a company X Ltd. for a period of 3 years at 6-month at MCLR plus 200 bps. You are concerned about X Ltd.'s ability to repay the debt due to recent market volatility. To protect your institution from potential default, you decide to purchase a Credit Default Swap (CDS) from ABC Bank Ltd. for same notional amount at a premium quoted at 1% per year through cash settlement.

On the respective reset dates for the same period actual MCLR interest rate comes out as follows:

Reset	MCLR
1	9.75%
2	10.00%
3	10.25%
4	10.35%
5	10.50%
6	10.60%

From the information given above, choose the correct answer to the following questions:

6. The primary purpose of a Credit Default Swap (CDS) is.....
 - (a) to increase the value of bonds.
 - (b) to protect against default risk of a debt obligation.
 - (c) to provide guaranteed profit to the buyer.
 - (d) to create a new form of loan.
7. Which of the following statements is true about CDS contracts?
 - (a) CDS contracts cannot be used for speculation.
 - (b) CDS contracts are governed by government regulations.
 - (c) CDS contracts are private agreements between two parties.
 - (d) CDS contracts eliminate all risks for the buyer.
8. Which organization publishes the guidelines and rules for conducting Credit Default Swap transactions?
 - (a) Federal Reserve

- (b) International Swap and Derivative Association (ISDA)
 - (c) Securities and Exchange Commission (SEC)
 - (d) World Trade Organization (WTO)
9. Assuming no default occurs the total premium your company will pay during the designated loan period shall be.....
- (a) ₹ 5 crore
 - (b) ₹ 10 crore
 - (c) ₹ 15 crore
 - (d) ₹ 30 crore
- (4 x 2 = 8 Marks)**

Case Scenario III

During one business meeting at XYZ Ltd., one of the member pointed out that while evaluating the performance of any company one should not only see its Operating Income but should also analyse its Capital structure as well. Weighted Average Cost of Capital changes on the basis of capital structure keeping all other factors unchanged.

He presented data relating to 3 companies Alpha Ltd., Beta Ltd. and Gama Ltd. whose operating Income are equal, but their capital structure is different.

The following information relating to these 3 companies is as follows:

(in ₹ 000)

	Alpha Ltd.	Beta Ltd.	Gama Ltd.
Total invested capital	20,00,000	20,00,000	20,00,000
Debt/Assets ratio	0.8	0.5	0.2
Shares outstanding	61,000	83,000	1,00,000
Pre tax Cost of Debt	16%	13%	15%
Cost of Equity	26%	22%	20%
Operating Income (EBIT)	5,00,000	5,00,000	5,00,000

The Tax rate is uniform 35% in all cases. The industry PE ratio is 11X.

From the information given above, choose the correct answer to the following questions:

10. The weighted average cost of capital of Alpha Ltd. shall approximately be
- (a) 13.520%
 - (b) 15.225%

- (c) 17.950%
- (d) 18.000%
11. The Economic Valued Added (EVA) of Beta Ltd. is.....
- (a) ₹ 54600 Thousand
- (b) ₹ 20500 Thousand
- (c) (-) ₹ 34000 Thousand
- (d) ₹ 21500 Thousand
12. The price per share of Gama Ltd. shall be
- (a) ₹ 28.60
- (b) ₹ 31.90
- (c) ₹ 31.46
- (d) ₹ 29.45
- (3 x 2 = 6 Marks)**

Case Scenario IV

A US parent company has subsidiaries in France, Germany, UK and Italy. The amounts due to and from the affiliates is converted into a common currency viz. US dollar and entered in the following matrix.

Inter Subsidiary Payments Matrix				(US \$ Thousands)		
Paying affiliate						
		France	Germany	UK	Italy	Total
Receiving affiliate	France	---	80	120	200	400
	Germany	120	---	80	160	360
	UK	160	120	---	140	420
	Italy	200	60	120	---	380
	Total	480	260	320	500	1560

The treasurer of US Parent company is suggesting that by applying Multilateral Netting system the company can save a lot of transfer/ exchange costs. The company's Board agreed with Treasurer's proposal.

From the information given above, choose the correct answer to the following questions:

13. Before applying Multilateral Netting it is necessary to apply.....
- (a) Unilateral Netting
 - (b) Bilateral Netting
 - (c) Multilateral Netting
 - (d) Interest Rate Swapping
14. Through Multinational Netting these transfers will be reduced to
- (a) \$ 50,000
 - (b) \$ 100,000
 - (c) \$ 150,000
 - (d) \$ 200,000
15. The Net Payment/ Net Receipts for France after netting off shall be.....
- (a) Net Receipt \$ 40,000
 - (b) Net Payment \$ 80,000
 - (c) Net Payment \$ 40,000
 - (d) Net Receipt \$ 80,000
- (3 x 2 = 6 Marks)**

PART – II DESCRIPTIVE QUESTIONS

Question No.1 is compulsory. Candidates are required to answer any four questions from the remaining five questions.

Working notes should form part of the answer.

Maximum Marks – 70 Marks

1. (a) The Treasury desk of a global bank incorporated in UK wants to invest GBP 200 million on 1st January, 2019 for a period of 6 months and has the following options:
- (1) The Equity Trading desk in Japan wants to invest the entire GBP 200 million in high dividend yielding Japanese securities that would earn a dividend income of JPY 1,182 million. The dividends are declared and paid on 29th June. Post dividend, the securities are expected to quote at a 2% discount. The desk also plans to earn JPY 10 million on a stock

borrow lending activity because of this investment. The securities are to be sold on June 29 with a T+1 settlement and the amount remitted back to the Treasury in London.

- (2) The Fixed Income desk of US proposed to invest the amount in 6 month G-Secs that provides a return of 5% p.a.

The exchange rates are as follows:

Currency Pair	1 Jan 2019 (Spot)	30 Jun 2019 (Forward)
GBP - JPY	148.0002	150.0000
GBP - USD	1.28000	1.30331

As a treasurer, advise the bank on the best investment option. What would be your decision from a risk perspective? You may ignore taxation. **(6 Marks)**

Note: Show all calculations in Millions and round off them upto two decimal points.

- (b) MPD Ltd. issues a ₹ 50 Million Floating Rate Loan on July 1, 2018 with resetting of coupon rate every 6 Months equal to LIBOR + 50 bps.

MPD is interested in an Interest rate Collar Strategy of selling a Floor and buying a cap.

MPD buys the 3 years cap and sell 3 years Floor as per the following details on July 1, 2018:

Principal Amount	₹ 50 Million
Strike Rate	5% for Floor & 8% for Cap
Reference Rate	6 months LIBOR
Premium	NIL, since premium paid for cap = premium received for Floor

The Reset dates & Interest rates p.a., on that dates are:

Reset Date	31/12/2018	30/06/2019	31/12/2019	30/06/2020	31/12/2020	30/06/2021
LIBOR (%)	7.00	8.00	6.00	4.75	4.25	5.25

Using the above data, you are required to determine:

- (i) Effective Interest paid out at each six reset dates, (Round off to the nearest rupee)
- (ii) Average overall effective rate of interest p.a. (round off to 2 decimals).

(8 Marks)

2. (a) SS Company is considering the replacement of its existing machine with a new machine. The Purchase price of the New machine is ₹ 26 Lakhs and its expected Life is 8 years. The company follows straight-line method of depreciation on the original investment (scrap value is not considered for the purpose of depreciation). The other expenses to be incurred for the New Machine are as under:

- (i) Installation Charges ₹ 9,000
- (ii) Fees paid to the consultant for his advice to buy New Machine ₹ 6,000.
- (iii) Additional Working Capital required ₹ 17,000. (will be released after 8 years)

The written down value of the existing machine is ₹ 76,000, and its Cash Salvage Value is ₹ 12,500. The dismantling of this machine would cost ₹ 4,500. The Annual Earnings (before tax but after depreciation) from the New Machine would amount to ₹ 3,15,000. Income tax rate is 35%. The Company's required Rate of Return is 13%.

You are required to advise on the viability of the proposal.

PVIF (13%, 8) = 0.376 PVIFA (13%, 8) = 4.80 **(6 Marks)**

- (b) STR Ltd.'s current financial year's income statement reported its net income after tax as ₹ 50 Crore.

Following is the capital structure of STR Ltd. at the end of current financial year:

	₹
Debt (Coupon rate = 11%)	80 Crore
Equity (Share Capital + Reserves & Surplus)	250 Crore
Invested Capital	330 Crore

Following data is given to estimate cost of equity capital:

Asset Beta of TSR Ltd.	1.11
Risk –free Rate of Return	8.50%
Average market risk premium	9%

The applicable corporate income tax rate is 30%.

Estimate Economic Value Added (EVA) of RST Ltd. in ₹ lakh. **(4 Marks)**

Note: Round off all calculations upto two decimal points.

- (c) Briefly Explain the parameters to identify the currency risk. **(4 Marks)**

3. (a) Mr. Y has invested in the three mutual funds (MF) as per the following details:

Particulars	MF 'X'	MF 'Y'	MF 'Z'
Amount of Investment (₹)	2,00,000	4,00,000	2,00,000
Net Assets Value (NAV) at the time of purchase (₹)	10.30	10.10	10
Dividend Received up to 31.03.2018 (₹)	6,000	0	5,000
NAV as on 31.03.2018 (₹)	10.25	10	10.20
Effective Yield per annum as on 31.03.2018 (percent)	9.66	-11.66	24.15

Assume 1 Year = 365 days

Mr. Y has misplaced the documents of his investment. Help him in finding the date of his original investment after ascertaining the following:

- (i) Number of units in each scheme;
- (ii) Total NAV;
- (iii) Total Yield; and
- (iv) Number of days investment held. **(6 Marks)**

- (b) Following is the data regarding six securities:

	U	V	W	X	Y	Z
Return (%)	10	10	15	5	11	10
Risk (%) (Standard deviation)	5	6	13	5	6	7

- (i) Recommend at least three securities which shall be selected among the six securities mentioned above.
- (ii) Assuming perfect correlation, evaluate whether it is preferable to invest 80% in security U and 20% in security W or to invest 100% in Y.

(4 Marks)

Either

- (c) What are the risk associated with the use of blockchain technology? **(4 Marks)**

OR

- (c) What are the various indicators are used to find out how the economy shall perform in the future? **(4 Marks)**

4. (a) Columbus Surgical Inc. is based in US, has recently imported surgical raw materials from the UK and has been invoiced for £ 480,000, payable in 3 months. It has also exported surgical goods to India and France.

The Indian customer has been invoiced for £ 138,000, payable in 3 months, and the French customer has been invoiced for € 590,000, payable in 4 months.

Current spot and forward rates are as follows:

	£ / US\$
Spot:	0.9830 – 0.9850
Three months forward:	0.9520 – 0.9545

	US\$ / €
Spot:	1.8890 – 1.8920
Four months forward:	1.9510 – 1.9540

Current money market rates are as follows:

UK:	10.0% – 12.0% p.a.
France:	14.0% – 16.0% p.a.
USA:	11.5% – 13.0% p.a.

You as Treasury Manager are required to show how the company can hedge its foreign exchange exposure using Forward markets and Money markets hedge and suggest which the best hedging technique is. **(6 Marks)**

- (b) A hypothetical company ABC Ltd. issued a 10% Debenture (Face Value of ₹ 1000) of the duration of 10 years is currently trading at ₹ 850 per debenture. The bond is convertible into 50 equity shares being currently quoted at ₹ 17 per share.

If yield on equivalent comparable bond is 11.80%, then determine the spread of yield of the above bond from this comparable bond.

The relevant present value table is as follows.

Present Values	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀
PVIF _{0.11, t}	0.901	0.812	0.731	0.659	0.593	0.535	0.482	0.434	0.391	0.352
PVIF _{0.13 t}	0.885	0.783	0.693	0.613	0.543	0.480	0.425	0.376	0.333	0.295

(4 Marks)

- (c) Discuss any four innovative sources of financing available for startups apart from traditional bank loans. **(4 Marks)**
5. (a) X Ltd. is studying the possible acquisition of Y Ltd. by way of merger. The following data are available in respect of both the companies.

Particulars	X Ltd.	Y Ltd.
Market Capitalization (₹)	75,00,000	90,00,000
Gross Profit Ratio	20%	20%
Inventory Turnover Ratio	5 times	4 times
Debtor Turnover Ratio	3 times	5 times
12% Debenture (₹)	10,00,000	-
10% Debenture (₹)	-	14,40,000
No. of Equity Shares	1,00,000	60,000
Operating Expenses	86%	78%
Corporate Tax Rate	30%	30%
Closing Stock (₹)	15,00,000	5,00,000
Debtors (₹)	10,00,000	8,00,000

You are required to calculate:

- Swap ratio based on EPS & MPS respectively as weightage of 40% and 60%.
 - Post Merger EPS
 - Post Merger market price assuming same PE Ratio of X Ltd.
 - Post Merger gain or loss in EPS **(8 Marks)**
- (b) Mr. X owns a portfolio with the following characteristics:

	Security A	Security B	Risk Free security
Factor 1 sensitivity	0.80	1.50	0
Factor 2 sensitivity	0.60	1.20	0
Expected Return	15%	20%	10%

It is assumed that security returns are generated by a two factor model.

- If Mr. X has ₹ 1,00,000 to invest and sells short ₹ 50,000 of security B and purchases ₹ 1,50,000 of security A what is the sensitivity of Mr. X's portfolio to the two factors?

- (ii) If Mr. X borrows ₹ 1,00,000 at the risk free rate and invests the amount he borrows along with the original amount of ₹ 1,00,000 in security A and B in the same proportion as described in part (i), what is the sensitivity of the portfolio to the two factors?

(iii) What is the expected return premium of factor 2? **(6 Marks)**

6. (a) The following data are available for three bonds A, B and C. These bonds are used by a bond portfolio manager to fund an outflow scheduled in 6 years. Current yield is 9%. All bonds have face value of ₹100 each and will be redeemed at par. Interest is payable annually.

Bond	Maturity (Years)	Coupon rate
A	10	10%
B	8	11%
C	5	9%

- (i) Calculate the duration of each bond.
- (ii) The bond portfolio manager has been asked to keep 45% of the portfolio money in Bond A. Calculate the percentage amount to be invested in bonds B and C that need to be purchased to immunise the portfolio.
- (iii) After the portfolio has been formulated, an interest rate change occurs, increasing the yield to 11%. The new duration of these bonds are: Bond A = 7.15 Years, Bond B = 6.03 Years and Bond C = 4.27 years.

Is the portfolio still immunized? Why or why not?

- (iv) Determine the new percentage of B and C bonds that are needed to immunize the portfolio. Bond A remaining at 45% of the portfolio.

Present values be used as follows :

Present Values	t_1	t_2	t_3	t_4	t_5
$PVIF_{0.09,t}$	0.917	0.842	0.772	0.708	0.650

Present Values	t_6	t_7	t_8	T_9	t_{10}
$PVIF_{0.09,t}$	0.596	0.547	0.502	0.460	0.4224

(8 Marks)

(b) An Indian company obtains the following quotes (₹/\$)

Spot: 85.90/86.10

3 - Months forward rate: 86.00/86.25

6 - Months forward rate: 86.10/86.40

The company needs \$ funds for six months. Determine whether the company should borrow in \$ or ₹

Interest rates are :

3 - Months interest rate : ₹ : 12%, \$: 6%

6 - Months interest rate : ₹ : 11.50%, \$: 5.5%

Also determine what should be the rate of interest after 3-months to make the company indifferent between 3-months borrowing and 6-months borrowing in the case of:

(i) Rupee borrowing

(ii) Dollar borrowing

Note: For the purpose of calculation you can take the units of dollar and rupee as 100 each. **(6 Marks)**

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PAPER – 2: ADVANCED FINANCIAL MANAGEMENT

ANSWER TO PART – I CASE SCENARIO BASED MCQS

1. Option (a)
2. Option (b)
3. Option (c)
4. Option (c)
5. Option (d)
6. Option (b)
7. Option (c)
8. Option (b)
9. Option (c)
10. Option (a)
11. Option (b)
12. Option (c)
13. Option (b)
14. Option (d)
15. Option (b)

ANSWERS OF PART – II DESCRIPTIVE QUESTIONS

1. (a) (1) Yield from Investment in Equity Trading Index in Japan

Conversion of GBP 200 million in JPY (148.0002)	JPY 29600.04 Million
Dividend Income	JPY 1182.00 Million
Stock Lending	JPY 10.00 Million
Investment Value at End	JPY 29008.0392 Million

Amount available at End	JPY 30200.0392 Million
Forward Rate of 30.06.2019	JPY 150/ GBP
Amount to be Remitted back to London	GBP 201.3336 Million
Gain = 201.3336 – 200	GBP 1.3336 Million

(2) Fixed Income Desk of US

Conversion of GBP 200 million in USD (1.28000)	USD 256.00 Million
Add: Interest @ 5% p.a. for 6 months	USD 6.40 Million
Amount available at End	USD 262.40 Million
Forward Rate of 30.06.2019	USD 1.30331/ GBP
Amount to be Remitted back to London	GBP 201.3335 Million
Gain = 201.3335 – 200	GBP 1.3335 Million

Decision: Investment in Japanese Yen is preferred over the investment in USD G- Sec as there is a marginal gain. From a risk perspective, the company should go for Option-2 Investment in G-Secs as they are risk free.

(b) (i) The pay-off of each leg shall be computed as follows:

Cap Receipt

Max {0, [Notional principal x (LIBOR on Reset date – Cap Strike Rate) x (No. of days in settlement period/ 365)}

Floor Pay-off

Max {0, [Notional principal x (Floor Strike Rate – LIBOR on Reset date) x (No. of days in settlement period/ 365)}

Statement showing effective interest on each payment date

Reset Date	LIBOR (%)	Date of Payment	Days	Interest Payment (₹) LIBOR+0.50%	Cap Receipts (₹)	Floor Pay-off (₹)	Effective Interest
31-12-2018	7.00	30-06-2019	181	18,59,589	0	0	18,59,589
30-06-2019	8.00	31-12-2019	184	21,42,466	0	0	21,42,466
31-12-2019	6.00	30-06-2020	182	16,16,120	0	0	16,16,120
30-06-2020	4.75	31-12-2020	184	13,19,672	0	62,842	13,82,514
31-12-2020	4.25	30-06-2021	181	11,77,740	0	1,85,959	13,63,699
30-06-2021	5.25	31-12-2021	184	14,49,315	0	0	14,49,315
Total			1096				98,13,703

(ii) Average Annual Effective Interest Rate shall be computed as follows:

$$\frac{98,13,703}{5,00,00,000} \times \frac{365}{1096} \times 100 = 6.54\%$$

2. (a) Working Notes:

1. Computation of Annual Depreciation-

Particulars	₹
Purchase Price	26,00,000
Add: 1. Installation Charges	9,000
2. Fees Paid to Consultant for Advice	6,000
Total Cost of New Machine	26,15,000
Useful Life	8 Years
Annual Depreciation (Total Cost/No. of Years)	3,26,875

2. Computation of Annual Cash Savings-

Particulars	₹
Annual Earnings	3,15,000
Less-Tax @35%	1,10,250
Earning after Tax	2,04,750
Add-Depreciation on New Machine	3,26,875
Annual Cash Savings	5,31,625

3. Tax effect on sale of Old Machine-

Particulars	₹
Proceeds of Sale	12,500
Less- Cost of Removal	4,500
Net Proceeds	8,000
Less: WDV	76,000
Net Loss due to Sale	68,000
Tax savings due to Loss on Sale @35%	23,800
Total Cash Inflow due to Sale (₹ 8,000+₹ 23,800)	31,800

4. Computation of Net Present Value

Particulars	Period	Cash Flow (₹)	PVF @13%	PV (₹)
(a) Annual Cash inflow after Tax	1-8	5,31,625	4.8	25,51,800
(b) Net Salvage Value of Existing Machine	0	31,800	1.0	31,800
(c) Working Capital Realized	8	17,000	0.376	6,392
Present Value of Cash Inflows				25,89,992
Less: 1. Initial Investment	0	26,15,000	1.0	26,15,000
2. Initial Working Capital	0	17,000	1.0	17,000
NPV of the Proposal				(42,008)

Decision: Since NPV of the project is negative it is not viable.

- (b) First of all, to calculate Cost of Equity we shall compute the Equity Beta of STR Ltd. as follows:

$$\beta_a = \beta_e \left[\frac{E}{E + D(1-t)} \right]$$

$$1.11 = \beta_e \left[\frac{250}{250 + 80(1-0.30)} \right]$$

$$\beta_e = 1.36$$

then we shall compute the Cost of Equity as per CAPM as follows:

$$\begin{aligned} k_e &= R_f + \beta \times \text{Market Risk Premium} \\ &= 8.50\% + 1.36 \times 9\% \\ &= 8.50\% + 12.24\% = 20.74\% \end{aligned}$$

$$\text{Cost of Debt } (k_d) = 11\%(1 - 0.30) = 7.70\%$$

$$\begin{aligned} \text{WACC } (k_o) &= k_e \times \frac{E}{E + D} + k_d \times \frac{D}{E + D} \\ &= 20.74 \times \frac{250}{330} + 7.70 \times \frac{80}{330} \\ &= 15.71 + 1.87 = 17.58\% \end{aligned}$$

$$\begin{aligned}
\text{Taxable Income} &= ₹ 50 \text{ Crore}/(1 - 0.30) \\
&= ₹ 7142.86 \text{ lakhs} \\
\text{Operating Income} &= \text{Taxable Income} + \text{Interest} \\
&= ₹ 7142.86 \text{ lakhs} + ₹ 880 \text{ lakhs} \\
&= ₹ 8022.86 \text{ lakhs} \\
\text{EVA} &= \text{EBIT} (1 - \text{Tax Rate}) - \text{WACC} \times \text{Invested Capital} \\
&= ₹ 8022.86 \text{ lakhs} (1 - 0.30) - 17.58\% \times ₹ 330 \text{ Crore} \\
&= ₹ 5616.00 \text{ lakhs} - ₹ 5801.40 \text{ lakhs} = - ₹ 185.40 \text{ lakhs}
\end{aligned}$$

(c) Currency risk is dependent on the Government action and economic development. Some of the parameters to identify the currency risk are as follows:

- (1) Government Action: The Government action of any country has visual impact in its currency. For example, the UK Govt. decision to divorce from European Union i.e. Brexit brought the pound to its lowest since 1980's.
- (2) Nominal Interest Rate: As per interest rate parity (IRP) the currency exchange rate depends on the nominal interest of that country.
- (3) Inflation Rate: Purchasing power parity theory discussed in later chapters impact the value of currency.
- (4) Natural Calamities: Any natural calamity can have negative impact.
- (5) War, Coup, Rebellion etc.: All these actions can have far reaching impact on currency's exchange rates.
- (6) Change of Government: The change of government and its attitude towards foreign investment also helps to identify the currency risk.

3. (a) (i) **Number of Units in each Scheme**

MF 'X'	$\frac{₹ 2,00,000}{₹ 10.30}$	= 19,417.48
MF 'Y'	$\frac{₹ 4,00,000}{₹ 10.10}$	= 39,603.96
MF 'Z'	$\frac{₹ 2,00,000}{₹ 10.00}$	= 20,000.00

(ii) **Total NAV on 31.03.2018**

MF 'X'	= 19,417.48 x ₹ 10.25	₹ 1,99,029.17
MF 'Y'	= 39,603.96 x ₹ 10.00	₹ 3,96,039.60
MF 'Z'	= 20,000.00 x ₹ 10.20	₹ 2,04,000.00
Total		₹ 7,99,068.77

(iii) **Total Yield**

	Capital Yield	Dividend Yield	Total
MF 'X'	₹ 1,99,029.17 - ₹ 2,00,000 = - ₹ 970.83	₹ 6,000	₹ 5,029.17
MF 'Y'	₹ 3,96,039.60 - ₹ 4,00,000 = - ₹ 3,960.40	Nil	- ₹ 3,960.40
MF 'Z'	₹ 2,04,000 - ₹ 2,00,000 = ₹ 4,000	₹ 5,000	₹ 9,000.00
Total			₹ 10,068.77

$$\text{Total Yield} = \frac{₹ 10,068.77}{₹ 8,00,000} \times 100 = 1.2586\%$$

(iv) **No. of Days Investment Held**

	MF 'X'	MF 'Y'	MF 'Z'
Initial Investment (₹)	2,00,000	4,00,000	2,00,000
Yield (₹)	5,029.17	-3,960.40	9,000.00
Yield (%)	2.5146	- 0.9901	4.5
Period of Holding (Days)	$\frac{2.5146}{9.66} \times 365$ = 95 Days	$\frac{-0.9901}{-11.66} \times 365$ = 31 Days	$\frac{4.5}{24.15} \times 365$ = 68 Days

Date of Original Investment 27.12.17 01.03.18 23.01.18

Alternatively following dates can also be considered:

Date of Original Investment 26.12.17 28.02.18 22.01.18

- (b) (i) When we make risk-return analysis of different securities from U to Z, we can observe that security U gives a return of 10% at risk level of 5%. Simultaneously securities V and Z give the same return of 10% as of

security U, but their risk levels are 6% and 7% respectively. Security X is giving only 5% return for the risk rate of 5%. Hence, security U dominates securities V, X and Z.

Securities W and Y offer more return but it carries higher level of risk.

Hence securities U, W and Y can be selected based on individual preferences.

- (ii) In a situation where the perfect positive correlation exists between two securities, their risk and return can be averaged with the proportion.

Assuming the perfect correlation exists between the securities U and W, average risk and return of U and W together for proportion 4 : 1 is calculated as follows:

$$\text{Risk} = (4 \times 5\% + 1 \times 13\%) \div 5 = 6.6\%$$

$$\text{Return} = (4 \times 10\% + 1 \times 15\%) \div 5 = 11\%$$

Therefore:	80% U	100%Y
	20% V	—
Risk	6.6%	6%
Return	11%	11%

When we compare risk of 6.6% and return of 11% with security Y with 6% risk and 11% return, security Y is preferable over the portfolio of securities U and W in proportion of 4 : 1.

- (c) The risk associated with the use blockchain technology are as follows:

- (i) With the use of blockchain, organizations need to consider risks with a wider perspective as different members of a particular blockchain may have different risk appetite/risk tolerances that may further lead to conflict when monitoring controls are designed for a blockchain.
- (ii) The reliability of financial transactions is dependent on the underlying technology and if this underlying consensus mechanism has been tampered with, it could render the financial information stored in the ledger to be inaccurate and unreliable.
- (iii) In the absence of any central authority to administer and enforce protocol amendments, there could be a challenge in the development and maintenance of process control activities and in such case, users of public blockchains find difficult to obtain an understanding of the general IT

controls implemented and the effectiveness of these controls.

- (iv) As blockchain involves humongous data getting updated frequently, risk related to information overload could potentially challenge the level of monitoring required.

OR

Various indicators are used to find out how the economy shall perform in the future. The indicators have been classified as under:

- (i) **Leading Indicators:** They lead the economic activity in terms of their outcome. They relate to the time series data of the variables that reach high/low points in advance of economic activity.
- (ii) **Roughly Coincidental Indicators:** They reach their peaks and troughs at approximately the same in the economy.
- (iii) **Lagging Indicators:** They are time series data of variables that lag behind in their consequences vis-a- vis the economy. They reach their turning points after the economy has reached its own already.

4. (a) £ Exposure

Since Columbus has a £ receipt (£ 138,000) and payment of (£ 480,000) maturing at the same time i.e. 3 months, it can match them against each other leaving a net liability of £ 342,000 to be hedged.

- (i) Forward market hedge

Buy 3 months' forward contract accordingly, amount payable after 3 months will be

$$£ 342,000 / 0.9520 = \text{US\$ } 359,244$$

- (ii) Money market hedge

To pay £ after 3 months' Columbus shall requires to borrow in US\$ and translate to £ and then deposit in £.

For payment of £ 342,000 in 3 months (@2.5% interest) amount required to be deposited now ($£ 342,000 \div 1.025$) = £ 333,658

With spot rate of 0.9830 the US\$ loan needed will be = US\$ 339,429

Loan repayable after 3 months (@3.25% interest) will be = US\$ 350,460

In this case the money market hedge is a cheaper option.

€ Receipt

Amount to be hedged = € 590,000

(i) Forward market hedge

Sell 4 months' forward contract accordingly, amount receivable after 4 months will be (€ 590,000 x 1.9510) = US\$ 1,151,090

(ii) Money market hedge

For money market hedge Columbus shall borrow in € and then translate to US\$ and deposit in US\$

For receipt of € 590,000 in 4 months (@ 5.33% interest) amount required to be borrowed now (€590,000 ÷ 1.0533) = € 560,144

With spot rate of 1.8890 the US\$ deposit will be = US\$ 1,058,113

Deposit amount will increase over 4 months (@3.83% interest) will be = US\$ 1,098,639

In this case, more will be received in US\$ under the forward hedge.

(b) Conversion Price = ₹ 50 x 17 = ₹ 850

Intrinsic Value = ₹ 850

Accordingly the yield (r) on the bond shall be :

$$₹ 850 = ₹ 100 \text{ PVA} (r, 10) + ₹ 1000 \text{ PVF} (r, 10)$$

Let us discount the cash flows by 11%

$$850 = 100 \text{ PVA} (11\%, 10) + 1000 \text{ PVF} (11\%, 10)$$

$$850 = 100 \times 5.890 + 1000 \times 0.352$$

$$= 91$$

Now let us discount the cash flows by 13%

$$850 = 100 \text{ PVA} (13\%, 10) + 1000 \text{ PVF} (13\%, 10)$$

$$850 = 100 \times 5.426 + 1000 \times 0.295$$

$$= -12.40$$

Accordingly, IRR

$$11\% + \frac{90.90}{90.90 - (-12.40)} \times (13\% - 11\%)$$

$$11\% + \frac{90.90}{103.30} \times (13\% - 11\%)$$

$$= 12.76\%$$

The spread from comparable bond = 12.76% - 11.80% = 0.96%

(c) Below are the four innovative sources of financing available for startups apart from traditional bank loans:

- (i) **Peer-to-peer lending:** In this process a group of people come together and lend money to each other. Peer to peer lending has been there for many years. Many small and ethnic business groups having similar faith or interest generally support each other in their start up endeavors.
- (ii) **Crowdfunding:** Crowdfunding is the use of small amounts of capital from a large number of individuals to finance a new business initiative. Crowdfunding makes use of the easy accessibility of vast networks of people through social media and crowdfunding websites to bring investors and entrepreneurs together.
- (iii) **Microloans:** Microloans are small loans that are given by individuals at lower interest rates to new business ventures. These loans can be issued by a single individual or aggregated across a number of individuals who each contribute a portion of the total amount.
- (iv) **Vendor financing:** Vendor financing is the form of financing in which a company lends money to one of its customers so that he can buy products from the company itself. Vendor financing also takes place when many manufacturers and distributors are convinced to defer payment until the goods are sold. This means extending the payment terms to a longer period for e.g. 30 days payment period can be extended to 45 days or 60 days. However, this depends on one's credit worthiness and payment of more money.

5. (a) Working Notes:

$$(1) \text{ Inventory Turnover Ratio} = \frac{\text{COGS}}{\text{Closing Stock}}$$

X Ltd.	Y Ltd.
$5 = \frac{\text{COGS}}{15,00,000}$	$4 = \frac{\text{COGS}}{5,00,000}$

COGS = ₹ 75,00,000	COGS = ₹ 20,00,000
Gross Profit Ratio = 20% means COGS is 80% of Sales, then	
$\text{Sales} = \frac{75,00,000 \times 100}{80} =$	$\text{Sales} = \frac{75,00,000 \times 100}{80}$
₹ 93,75,000	= ₹ 25,00,000

Statement of Profit

	X Ltd.	Y Ltd.
Sales	93,75,000	25,00,000
Less: Operating Exp.	80,62,500	19,50,000
EBIT	13,12,500	5,50,000
Less: Interest	1,20,000	1,44,000
EBT	11,92,500	4,06,000
Less: Tax@30%	3,57,750	1,21,800
EAT	8,34,750	2,84,200

(2)

	X Ltd.	Y Ltd.
No. of Shares	1,00,000	60,000
EPS (EAT/ No. of Shares)	$\frac{8,34,750}{1,00,000}$ = ₹ 8.34	$\frac{2,84,200}{60,000}$ = ₹ 4.74
Market Price Share (Market Capitalisation/ No. Shares)	$\frac{75,00,000}{1,00,000}$ = ₹ 75	$\frac{90,00,000}{60,000}$ = ₹ 150
PE Ratio (MPS/ EPS)	$\frac{75}{8.34}$ = 8.99	$\frac{150}{4.74}$ = 31.65

(i)
$$\text{Swap Ratio} = \frac{\text{Target Co.}}{\text{Acquirer Co.}}$$

	Acquirer Co. X Ltd.	Target Co. Y Ltd.	Weight
EPS	0.34	4.74	00.40
MPS	75	150	0.60

EPS	$\frac{4.74}{8.34} \times 0.40 =$	0.227
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MPS	$\frac{150}{75} \times 0.60$	1.200
		1.427

(ii) Post Merger EPS

$$= \frac{EAT_X + EAT_Y}{\text{No. of Shares of Both Cos.}}$$

$$= \frac{834750 + 284200}{1,00,000 + (60,000 \times 1.227)}$$

$$= \frac{1118950}{1,85,620}$$

$$= 6.03$$

(iii) Post Merger market price assuming same PE of X Ltd.

$$MPS = PE \times EPS$$

$$= 8.99 \times 6.03$$

$$= ₹ 54.21$$

(iv) Gain or Loss to the share holders

	Pre-Merger EPS	Post Merger EPS
X Ltd.	₹ 8.34	₹ 6.99
Y Ltd.	₹ 4.74	₹ 6.99 x 1.427 = ₹ 9.97

While Shareholders of X Ltd. will lose EPS of ₹ 1.35 (₹ 8.34 - ₹ 6.99) per share the shareholders of Y Ltd. stands to gain EPS of ₹ 5.23 (₹ 9.97 - ₹ 4.74) per share.

(b) (i) Mr. X's position in the two securities are +1.50 in security A and -0.5 in security B. Hence the portfolio sensitivities to the two factors:

$$b \text{ prop. 1} = 1.50 \times 0.80 + (-0.50 \times 1.50) = 0.45$$

$$b \text{ prop. 2} = 1.50 \times 0.60 + (-0.50 \times 1.20) = 0.30$$

(ii) Mr. X's revised position:

$$\text{Security A} \quad ₹ 3,00,000 / ₹ 1,00,000 = 3$$

$$\text{Security B} \quad -₹ 1,00,000 / ₹ 1,00,000 = -1$$

Risk free asset $-\text{₹ } 100000 / \text{₹ } 100000 = -1$

b prop. 1 = $3.0 \times 0.80 + (-1 \times 1.50) + (-1 \times 0) = 0.90$

b prop. 2 = $3.0 \times 0.60 + (-1 \times 1.20) + (-1 \times 0) = 0.60$

(iii) Expected Return = Risk Free Rate of Return + Risk Premium

Let λ_1 and λ_2 are the Value Factor 1 and Factor 2 respectively.

Accordingly

$15 = 10 + 0.80 \lambda_1 + 0.60 \lambda_2$

$20 = 10 + 1.50 \lambda_1 + 1.20 \lambda_2$

On solving equation, the value of $\lambda_1 = 0$, and risk premium of factor 2 for Securities A & B shall be as follows:

Using Security A's Return

Total Return = 15% = 10% + 0.60 λ_2

Risk Premium (λ_2) = 5% / 0.60 = 8.33%

Alternatively using Security B's Return

Total Return = 20% = 10 + 1.20 λ_2

Risk Premium = 10% / 1.20 = 8.33%

6. (a) (i) **Calculation of Bond Duration**

Bond A

Year	Cash flow	P.V. @ 9%		Proportion of bond value	Proportion of bond value x time (years)
1	10	0.917	9.17	0.086	0.086
2	10	0.842	8.42	0.079	0.158
3	10	0.772	7.72	0.073	0.219
4	10	0.708	7.08	0.067	0.268
5	10	0.650	6.50	0.061	0.305
6	10	0.596	5.96	0.056	0.336
7	10	0.547	5.47	0.051	0.357
8	10	0.502	5.02	0.047	0.376
9	10	0.460	4.60	0.043	0.387

10	110	0.4224	46.46	0.437	4.370
			106.40	1.000	6.862

Duration of the bond is 6.862 years or 6.86 year.

Bond B

Year	Cash flow	P.V. @ 9%		Proportion of bond value	Proportion of bond value x time (years)
1	11	0.917	10.087	0.091	0.091
2	11	0.842	9.262	0.083	0.166
3	11	0.772	8.492	0.076	0.228
4	11	0.708	7.788	0.070	0.280
5	11	0.650	7.150	0.064	0.320
6	11	0.596	6.556	0.059	0.354
7	11	0.547	6.017	0.054	0.378
8	111	0.502	55.772	0.502	4.016
			111.224	1.000	5.833

Duration of the bond B is 5.833 years or 5.84 years.

Bond C

Year	Cash flow	P.V. @ 9%		Proportion of bond value	Proportion of bond value x time (years)
1	9	0.917	8.253	0.082	0.082
2	9	0.842	7.578	0.076	0.152
3	9	0.772	6.948	0.069	0.207
4	9	0.708	6.372	0.064	0.256
5	109	0.650	70.850	0.709	3.545
			100.00	1.000	4.242

Duration of the bond C is 4.242 years or 4.24 years.

(ii) Amount of Investment required in Bond B and C

Period required to be immunized	6.000 Year
Less: Period covered from Bond A	<u>3.087 Year</u>
To be immunized from B and C	<u>2.913 Year</u>

Let proportion of investment in Bond B and C is b and c respectively then

$$b + c = 0.55 \quad (1)$$

$$5.883b + 4.242c = 2.913 \quad (2)$$

On solving these equations, the value of b and c comes 0.3534 or 0.3621 and 0.1966 or 0.1879 respectively and accordingly, the % of investment of B and C is 35.34% or 36.21% and 19.66 % or 18.79% respectively.

(iii) With revised yield the Revised Duration of Bond stands

$$0.45 \times 7.15 + 0.36 \times 6.03 + 0.19 \times 4.27 = 6.20 \text{ year}$$

No portfolio is not immunized as the duration of the portfolio has been increased from 6 years to 6.20 years.

(iv) New percentage of B and C bonds that are needed to immunize the portfolio.

Period required to be immunized	6.0000 Year
Less: Period covered from Bond A	3.2175 Year
To be immunized from B and C	<u>2.7825 Year</u>

Let proportion of investment in Bond B and C is b and c respectively, then

$$b + c = 0.55$$

$$6.03b + 4.27c = 2.7825$$

$$b = 0.2466$$

On solving these equations, the value of b and c comes 0.2466 and 0.3034 respectively and accordingly, the % of investment of B and C is 24.66% or 25% and 30.34 % or 30.00% respectively.

(b) (i) If company borrows in \$ then outflow would be as follows:

Let company borrows \$ 100	\$ 100.00
Add: Interest for 6 months @ 5.5%	<u>\$ 2.75</u>
Amount Repayable after 6 months	<u>\$ 102.75</u>
Applicable 6 month forward rate	86.40
Amount of Cash outflow in Indian Rupees	₹ 8,877.60

If company borrows equivalent amount in Indian Rupee, then outflow would be as follows:

Equivalent ₹ amount ₹ 86.10 x 100	₹ 8,610.00
Add: Interest @11.50% for months	<u>₹ 495.08</u>
	<u>₹ 9,105.08</u>

Since cash outflow is more in ₹ borrowing then borrowing should be made in \$.

- (ii) (a) Let ' i_r ' be the interest rate of ₹ borrowing make indifferent between 3 months borrowings and 6 months borrowing then

$$(1 + 0.03) (1 + i_r) = (1 + 0.0575)$$

$$i_r = 2.67\% \text{ or } 10.68\% \text{ (on annualized basis)}$$

- (b) Let ' i_d ' be the interest rate of \$ borrowing after 3 months to make indifference between 3 months borrowings and 6 months borrowings. Then,

$$(1 + 0.015) (1 + i_d) = (1 + 0.0275)$$

$$i_d = 1.232\% \text{ or } 4.93\% \text{ (on annualized basis)}$$