MODEL TEST PAPER - 5

FINAL COURSE: GROUP – I

PAPER – 2: ADVANCED FINANCIAL MANAGEMENT

ANSWER TO PART – I CASE SCENARIO BASED MCQS

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

ANSWERS OF PART – II DESCRIPTIVE QUESTIONS

1. (a) (i) Calculation of NPV of XY Co.:

Project X		**Cash Flow**	**PVF**	**PV**
Year				
1	(30 × 0.3) + (50 × 0.4) + (65 × 0.3)	48.5	0.909	44.09
2	(30 × 0.3) + (40 × 0.4) + (55 × 0.3)	41.5	0.826	34.28

3	(30 × 0.3) + (40 × 0.4) + (45 × 0.3)	38.5	0.751	28.91
				107.28
	NPV: (107.28 – 70.00) =			(+)37.28

Project Y (For 1-3 Years)

1-3	(40 × 0.2) + (45 × 0.5) + (50 × 0.3)	45.5	2.487	113.16
	NPV (113.16 – 80.00)			(+) 33.16

(ii) Calculation of Standard deviation σ

As per Hiller's model

$$M = \sum_{i=0}^{n} (1+r)^{-1} Mi$$

$$\sigma^2 = \sum_{i=0}^{n} (1+r)^{-2i} \sigma_i^2$$

Hence,

Project X

Year

1 $\sqrt{(30-48.5)^2 0.30 + (50-48.5)^2 0.40 + (65-48.5)^2 0.30}$

2 $\sqrt{(30-41.5)^2 0.30 + (40-41.5)^2 0.40 + (55-41.5)^2 0.30}$

3 $\sqrt{(30-38.5)^2 0.30 + (40-38.5)^2 0.40 + (45-38.5)^2 0.30}$

Standard Deviation about the expected value

$$= \sqrt{\frac{185.25}{(1+0.10)^2} + \frac{95.25}{(1+0.10)^4} + \frac{35.25}{(1+0.10)^6}}$$

$$= \sqrt{\frac{185.25}{1.21} + \frac{95.25}{1.4641} + \frac{35.25}{1.7716}} = \sqrt{153.10+65.06+19.90}$$

$$= \sqrt{238.06} = 15.43$$

Project Y (For 1-3 Years)

$$\sqrt{(40-45.5)^2\,0.20 + (45-45.5)^2\,0.50 + (50-45.5)^2\,0.30}$$

Standard Deviation about the expected value

$$= \sqrt{\frac{12.25}{(1+0.10)^2} + \frac{12.25}{(1+0.10)^4} + \frac{12.25}{(1+0.10)^6}}$$

$$= \sqrt{\frac{12.25}{1.21} + \frac{12.25}{1.4641} + \frac{12.25}{1.7716}} = \sqrt{10.12+8.37+6.91}$$

$$= \sqrt{25.4} = 5.03$$

Analysis: Project Y is less risky as its Standard Deviation is less than Project X.

(b) (i) Cancellation Rate:

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

$/ ₹ Market Buying Rate	₹ 63.6800
Less: Exchange Margin @ 0.10%	₹ 0.0636
	₹ 63.6163

Rounded off to ₹ 63.6175

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

Bank sells $2,00,000 @ ₹ 64.4000	₹ 1,28,80,000
Bank buys $2,00,000 @ ₹ 63.6175	₹ 1,27,23,500
Amount payable by customer	₹ 1,56,500

(c) Pitch presentation is a short and brief presentation (not more than 20 minutes) to investors explaining about the prospects of the company and why they should invest into the startup business. So, pitch deck presentation is a brief presentation using PowerPoint to provide a quick overview of business plan and convincing the investors to put some money into the business.

Following are some points to be kept in mind while preparing a pitch presentation:

(i) *Introduction:* To start with, first step is to give a brief account of yourself i.e. who are you? What are you doing?

(ii) *Team:* The next step is to introduce the audience to the people behind the scenes. The reason is that the investors will want to know the people who are going to make the product or service successful.

(iii) *Problem:* Further, the promoter should be able to explain the problem that the startup is going to solve and solutions emerging from it.

(iv) *Solution:* It is very important to describe in the pitch presentation as to how the company is planning to solve the problem.

(v) *Marketing/Sales:* This is a very important part where investors will be deeply interested. The market size of the product must be communicated to the investors.

(vi) *Projections or Milestones:* It is true that it is difficult to make financial projections for a startup concern.

2. (a) The only thing lefts Rohit and Bros to cover the risk in the money market. The following steps are required to be taken:

(i) Borrow pound sterling for 3- months. The borrowing has to be such that at the end of three months, the amount becomes £ 500,000. Say, the amount borrowed is £ x. Therefore

$$x\left[1+0.05\times\frac{3}{12}\right]=500{,}000 \text{ or } x = £493{,}827$$

(ii) Convert the borrowed sum into rupees at the spot rate. This gives: £493,827 × ₹ 56 = ₹ 27,654,312

(iii) The sum thus obtained is placed in the money market at 12 per cent to obtain at the end of 3- months:

$$S = ₹\ 27{,}654{,}312 \times \left[1+0.12\times\frac{3}{12}\right] = ₹\ 28{,}483{,}941$$

(iv) The sum of £500,000 received from the client at the end of 3-months is used to refund the loan taken earlier.

From the calculations. It is clear that the money market operation has resulted into a net gain of ₹ 483,941 (₹ 28,483,941 – ₹ 500,000 × 56).

If pound sterling has depreciated in the meantime. The gain would be even bigger.

(b) The bank (Dealer) covers itself by buying from the market at market selling rate.

Rupee – Dollar selling rate	= ₹ 42.85
Dollar – Hong Kong Dollar	= HK $ 7.5880
Rupee – Hong Kong cross rate	= ₹ 42.85 / 7.5880
	= ₹ 5.6471

Profit / Loss to the Bank

Amount received from customer (1 crore × 5.70)	₹ 5,70,00,000
Amount paid on cover deal (1 crore × 5.6471)	₹ 5,64,71,000
Profit to Bank	₹ 5,29,000

(c) Financial planning is the backbone of the business planning and corporate planning. It helps in defining the feasible area of operation for all types of activities and thereby defines the overall planning framework.

Financial planning is a systematic approach whereby the financial planner helps the customer to maximize his existing financial resources by utilizing financial tools to achieve his financial goals.

There are 3 major components of Financial planning:

- Financial Resources (FR)
- Financial Tools (FT)
- Financial Goals (FG)

Financial Planning = FR + FT + FG

3. (a) (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 prop. 1 =1.50 x 0.80 + (-0.50 x 1.50) = 0.45

b prop. 2 = 1.50 x 0.60 + (-0.50 x 1.20) = 0.30

(ii) Mr. X's current position:-

Security A ₹ 3,00,000 / ₹ 1,00,000 = 3

Security B -₹ 1,00,000 / ₹ 1,00,000 = -1

Risk free asset -₹ 100000 / ₹ 100000 = -1

b prop. 1 = 3.0 x 0.80 + (-1 x 1.50) + (- 1 x 0) = 0.90

b prop. 2 = 3.0 x 0.60 + (-1 x 1.20) + (-1 x 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 = $15\% = 10\% + 0.60\ \lambda_2$

Risk Premium (λ_2) = 5%/ 0.60 = 8.33%

Alternatively using Security B's Return

Total Return = $20\% = 10 + 1.20\ \lambda_2$

Risk Premium = 10%/ 1.20 = 8.33%

(b) The areas where Application of Blockchain can be noticed are given below: -

i. **Financial Services:** Blockchain can be used to provide an automated trade lifecycle in terms of the transaction log of any transaction of asset or property - whether physical or digital such as laptops, smartphones, automobiles, real estate, etc. from one person to another.

ii. **Healthcare:** Blockchain provides secure sharing of data in healthcare industry by increasing the privacy, security, and

interoperability of the data by eliminating the interference of third party and avoiding the overhead costs.

iii. **Government:** At the government front, there are instances where the technical decentralization is necessary but politically should be governed by governments like land registration, vehicle registration and management, e-voting etc. Blockchain improves the transparency and provides a better way to monitor and audit the transactions in these systems.

iv. **Travel Industry:** Blockchain can be applied in money transactions and in storing important documents like passports/other identification cards, reservations and managing travel insurance, loyalty, and rewards thus, changing the working of travel and hospitality industry.

v. **Economic Forecasts:** Blockchain makes possible the financial and economic forecasts based on decentralized prediction markets, decentralized voting, and stock trading, thus enabling the organizations to plan and shape their businesses.

4. (a) (i) Taxable Income = ₹ 15 lac/(1-0.30)

= ₹ 21.43 lacs or ₹ 21,42,857

Operating Income = Taxable Income + Interest

= ₹ 21,42,857 + ₹ 10,00,000

= ₹ 31,42,857 or ₹ 31.43 lacs

(ii) EVA = EBIT (1-Tax Rate) – WACC x Invested Capital

= ₹ 31,42,857(1 – 0.30) – 13% x ₹ 95,00,000

= ₹ 22,00,000 – ₹ 12,35,000 = ₹ 9,65,000

(iii) EVA Dividend = $\frac{₹\ 9,65,000}{₹\ 6,00,000}$ = ₹ 1.6083

(b) The factors affecting economic analysis are mentioned below: -

i. **Growth Rates of National Income and Related Measures*:*** For most purposes, what is important is the difference between the nominal growth rate quoted by GDP and the 'real' growth after taking inflation into account. The estimated growth rate of the economy would be a pointer to the prospects for the industrial

sector, and therefore to the returns investors can expect from investment in shares.

ii. **Growth Rates of Industrial Sector*:*** This can be further broken down into growth rates of various industries or groups of industries if required. The growth rates in various industries are estimated based on the estimated demand for its products.

iii. **Inflation*:*** Inflation is measured in terms of either wholesale prices (the Wholesale Price Index or WPI) or retail prices (Consumer Price Index or CPI). The demand in some industries, particularly the consumer products industries, is significantly influenced by the inflation rate. Therefore, firms in these industries make continuous assessment about inflation rates likely to prevail in the near future so as to fine-tune their pricing, distribution and promotion policies to the anticipated impact of inflation on demand for their products.

iv. **Monsoon*:*** Because of the strong forward and backward linkages, monsoon is of great concern to investors in the stock market too.

(c) The various techniques to manage this type of risk are as follows:

i. Carrying out Due Diligence before dealing with any third party.

ii. Do not over commit to a single entity or group or connected entities.

iii. Know your exposure limits.

iv. Review the limits and procedure for credit approval regularly.

v. Rapid action in the event of any likelihood of defaults.

vi. Use of performance guarantee, insurance or other instruments.

OR

The main types of risks associated with investment in collateralized debt Obligation (CDOs): -

a) Default Risk: - Also called ‘credit risk’, it emanates from the default of underlying party to the instruments. The prime sufferers of these types of risks are equity or junior tranche in the waterfall.

(b) **Interest Rate Risk: -** Also called Basis risk and mainly arises due to different basis of interest rates. For example, asset may be based on floating interest rate but the liability may be based on fixed interest rates. Though this type of risk is quite difficult to manage fully but commonly used techniques such as swaps, caps, floors, collars etc. can be used to mitigate the interest rate risk.

(c) **Liquidity Risk: -** Another major type of risk by which CDOs are affected is liquidity risks as there may be mismatch in coupon receipts and payments.

(d) **Prepayment Risk: -** This risk results from unscheduled or unexpected repayment of principal amount underlying the security. Generally, this risk arises in case assets are subject to fixed rate of interest and the debtors have a call option. Since, in case of falling interest rates they may pay back the money.

(e) **Reinvestment Risk: -** This risk is generic in nature as the CDO manager may not find adequate opportunity to reinvest the proceeds when allowed for substitutions.

(f) **Foreign Exchange Risk: -** Sometimes CDOs are comprised of debts and loans from countries other than the country of issue. In such a case, in addition to above mentioned risks, CDOs are also subject to the foreign exchange rate risk.

5. (a) Working Notes:

1. Estimated Exchange Rates (Using PPP Theory)

Year	0	1	2	3	4	5	6
Exchange Rate	57	57.54	57.82	57.82	57.54	56.99	56.18

2. Share in sales

Year	**1**	**2**	**3**	**4**	**5**
Annual Units in crores	24	24	24	24	24
Price per bottle (₹)	7.50	8.50	9.50	10.50	11.50
Price fluctuating Inflation Rate	6.00%	5.50%	5.00%	4.50%	4.00%

Inflated Price (₹)	7.95	8.97	9.98	10.97	11.96
Inflated Sales Revenue (₹ Crore)	190.80	215.28	239.52	263.28	287.04
Sales share @55%	104.94	118.40	131.74	144.80	157.87

3. Royalty Payment

Year	1	2	3	4	5
Annual Units in crores	24	24	24	24	24
Royalty in $	0.01	0.01	0.01	0.01	0.01
Total Royalty ($ Crore)	0.24	0.24	0.24	0.24	0.24
Exchange Rate	57.54	57.82	57.82	57.54	56.99
Total Royalty (₹ Crore)	13.81	13.88	13.88	13.81	13.68

4. Tax Liability (₹ Crore)

Year	1	2	3	4	5
Sales Share	104.94	118.40	131.74	144.80	157.87
Total Royalty	13.81	13.88	13.88	13.81	13.68
Total Income	118.75	132.28	145.61	158.61	171.55
Less: Expenses					
Production Cost (Sales share x 40%)	41.98	47.36	52.69	57.92	63.15
Depreciation (195 x 20%)	39.00	39.00	39.00	39.00	39.00
PBT	37.77	45.92	53.92	61.69	69.40
Tax on Profit @30%	11.33	13.78	16.18	18.51	20.82
Net Profit	26.44	32.14	37.74	43.18	48.58

5. Free Cash Flow (₹ Crore)

Year	0	1	2	3	4	5	6
Sales Share	0.00	104.94	118.40	131.74	144.80	157.87	0.00
Total Royalty	0.00	13.81	13.88	13.88	13.81	13.68	0.00
Production Cost	0.00	-41.98	-47.36	-52.69	-57.92	-63.15	0.00

Initial Outlay	-200.00	0.00	0.00	0.00	0.00	0.00	0.00
Working Capital	-50.00	-5.00	-5.00	-5.00	-5.00	70.00	0.00
Scrap Value	0.00	0.00	0.00	0.00	0.00	5.00	0.00
Tax on Profit	0.00	0.00	-11.33	-13.78	-16.18	-18.51	-20.82
Free Cash Flow	**-250.00**	**71.77**	**68.59**	**74.15**	**79.51**	**164.89**	**-20.82**

6. Remittance of Cash Flows

(₹ Crore)

Year	0	1	2	3	4	5	6
Free Cash Flow	-250.00	71.77	68.59	74.15	79.51	164.89	-20.82
50% of Current Year Cash Flow	0.00	35.89	34.29	37.07	39.76	82.45	0.00
Previous year remaining cash flow	0.00	0.00	35.88	34.30	37.08	39.75	82.44
Total Remittance	**-250.00**	**35.88**	**70.17**	**71.37**	**76.84**	**122.20**	**61.62**

NPV of Project under Appraisal

Year	0	1	2	3	4	5	6	7
Total Remittance (₹ Crore)	-250.00	35.88	70.17	71.37	76.84	122.20	61.62	-
Exchange Rate	57.00	57.54	57.82	57.82	57.54	56.99	56.18	-
Remittance ($ mn)	-43.86	6.24	12.14	12.34	13.35	21.44	10.97	-
US Tax @35% ($ mn)	0.00	0.00	2.18	4.25	4.32	4.67	7.50	3.84
Indian Tax ($ mn)	0.00	0.00	1.96	2.38	2.82	3.25	3.71	-
Net Tax ($ mn)	0.00	0.00	0.22	1.87	1.51	1.42	3.79	3.84
Net Cash Flow ($ mn)	-43.86	6.24	11.92	10.47	11.84	20.02	7.18	-3.84
PVF @ 15%	1.000	0.870	0.756	0.658	0.572	0.497	0.432	0.376

Present Value ($ mn)	-43.86	5.43	9.01	6.89	6.77	9.95	3.10	-1.44
Net Present Value ($ mn)								= -4.15

Decision: Since NPV of the project is negative, Perfect inc. should not invest in the project.

(b) Number of index future to be sold by the Fund Manager is:

$$\frac{1.1\times 90,00,00,000}{4,300\times 50} = 4,605$$

Justification of the answer:

Loss in the value of the portfolio if the index falls by 10% is ₹ $\frac{11}{100}$x90 Crore = ₹ 9.90 Crore.

Gain by short covering of index future is: $\frac{0.1\times 4,300\times 50\times 4,605}{1,00,00,000} = 9.90$ Crore

This justifies the answer. Further, cash is not a part of the portfolio.

6. (a)

Shares	**No. of shares (lakhs) (1)**	**Market Price of Per Share (2)**	**× (2) (₹ lakhs)**	**% to total (w)**	**ß (x)**	**wx**
A Ltd.	3.00	500.00	1500.00	0.30	1.40	0.42
B Ltd.	4.00	750.00	3000.00	0.60	1.20	0.72
C Ltd.	2.00	250.00	500.00	0.10	1.60	0.16
			5000.00	**1.00**		**1.30**

(1) Portfolio beta 1.30

(2) Required Beta 0.91

Let the proportion of risk free securities for target beta 0.91 = p

0.91 = 0 × p + 1.30 (1 – p)

p = 0.30 i.e. 30%

Shares to be disposed off to reduce beta (5000 × 30%) ₹ 1,500 lakh and Risk Free securities to be acquired.

(3) Number of shares of each company to be disposed off

Shares	% to total (w)	Proportionate Amount (₹ lakhs)	Market Price Per Share	No. of Shares (Lakh)
A Ltd.	0.30	450.00	500.00	0.90
B Ltd.	0.60	900.00	750.00	1.20
C Ltd.	0.10	150.00	250.00	0.60

(4) Number of Nifty Contract to be sold

$$\frac{(1.30-0.91) \times 5000 \text{ lakh}}{8,125 \times 200} = 120 \text{ contracts}$$

(b) As borrower does not want to pay more than 8.5% 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:

- Notional Principal: ₹ 40,00,000/-
- Strike rate: 8.5% 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 2016
- 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 8.5% calculated on ₹ 40,00,000/-. This implies that in none of the cases the cost of this loan will rise above 8.5%. 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 **30,000/-** (₹ 40,00,000 x 0.75/100). 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 2013

The buyer of the caps will receive the compensation at the rate of 1.70% (10.20 - 8.50) to be calculated on ₹ 40,00,000, the amount of compensation will be ₹ 68000/- (40,00,000 x 1.70/100).

On 31st March 2014

The buyer of the caps will receive the compensation at the rate of 3.00% (11.50 – 8.50) to be calculated on ₹ 40,00,000/-, the amount of compensation will be ₹ 120000/- (40,00,000 x 3.00/100).

On 31st March 2015

The buyer of the caps will receive the compensation at the rate of 0.75% (9.25 – 8.50) to be calculated on ₹ 40,00,000/-, the amount of compensation will be ₹ 30,000 (40,00,000 x 0.75/100).

On 31st March 2016

The buyer of the caps will not receive the compensation as the actual rate of interest is 8.25% whereas strike rate of caps is 8.5%. Hence, his interest liability shall not exceed 8.50%.

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