MODEL TEST PAPER - 10

FINAL COURSE: GROUP – I

PAPER – 2: ADVANCED FINANCIAL MANAGEMENT

ANSWER TO PART – I CASE SCENARIO BASED MCQS

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

ANSWERS OF PART – II DESCRIPTIVE QUESTIONS

1. (a) Determination of forecasted Free Cash Flow of the Firm (FCFF)

(₹ in crores)

	Yr. 1	Yr. 2	Yr. 3	Terminal Year
Revenue	9000.00	10800.00	12960.00	13996.80
COGS	3600.00	4320.00	5184.00	5598.72

Operating Expenses	1980.00*	2376.00	2851.20	3079.30
Depreciation	720.00	864.00	1036.80	1119.74
EBIT	2700.00	3240.00	3888.00	4199.04
Tax @30%	810.00	972.00	1166.40	1259.71
EAT	1890.00	2268.00	2721.60	2939.33
Capital Exp. – Dep.	172.50	198.38	228.13	-
Δ Working Capital	375.00	450.00	540.00	259.20
Free Cash Flow (FCF)	1342.50	1619.62	1953.47	2680.13

* Excluding Depreciation.

Present Value (PV) of FCFF during the explicit forecast period is:

FCFF (₹ in crores)	PVF @ 15%	PV (₹ in crores)
1342.50	0.8696	1167.44
1619.62	0.7561	1224.59
1953.47	0.6575	1284.41
		3676.44

PV of the terminal, value is:

$\frac{2680.13}{0.15 - 0.08} \times \frac{1}{(1.15)^3}$ = ₹ 38287.57 Crore x 0.6575 = ₹ 25174.08 Crore

The value of the firm is:

₹ 3676.44 Crores + ₹ 25174.08 Crores = ₹ 28,850.52 Crores

(b) Maximum decline in one month = $\frac{(17025-15322.5)}{17025} \times 100 = 10\%$

(1) Immediately to start with

Investment in equity = Multiplier x (Portfolio value – Floor value)

= 2 (5,00,000 – 4,50,000) = ₹ 1,00,000

Shiva may invest ₹ 1,00,000 in equity and balance in risk free securities.

(2) After 15 days

Value of equity = 1,00,000 x 16321.89 / 17025 = ₹ 95,870

Value of risk free investment ₹ 4,00,000

Total value of portfolio = ₹ 4,95,870

Investment in equity = Multiplier x (Portfolio value – Floor value)

= 2 (4,95,870 – 4,50,000) = ₹ 91,740

Revised Portfolio:

Equity = ₹ 91,740

Risk free Securities = ₹ 4,95,870 – ₹ 91,740 = ₹ 4,04,130

(3) After another 15 days

Value of equity = 91,740 x 17512.14 / 16321.89 = ₹ 98,430

Value of risk free investment = ₹ 4,04,130

Total value of portfolio = ₹ 5,02,560

Investment in equity = Multiplier x (Portfolio value – Floor value)

= 2 (5,02,560 – 4,50,000) = ₹ 1,05,120

Revised Portfolio:

Equity = ₹ 1,05,120

Risk Free Securities = ₹ 5,02,560 – ₹ 1,05,120 = ₹ 3,97,440

The investor should off-load ₹ 6,690 of risk free securities and divert to Equity.

2. (a) (1) Impact of Financial Restructuring

Particulars	₹ in Lac
Benefits to PK Ltd.	
1. Reduction in Equity Share capital (90×8)	720
2. Reduction in Preference Share Capital (3×50)	150

3. Waiver of Trade payables (400 @ 40%)	160
(A) Total (1+2+3)	**1030**
Amount of ₹ 1030 Lacs utilised to write off losses & overvalued assets	
1. Losses	500
2. Over valued Non Current Assets (1000-500)	500
(B) Total (1+2)	**1000**
Amount unutilized transfer to Capital Reserve (A - B)	30

(2) Balance Sheet of PK Ltd. as on 31.03.2015 (after reconstruction)

Particulars	₹ in Lac
I. EQUITY & LIABILITIES	
Shareholder's Fund	
Equity Share Capital (₹ 2 each)	700.00
8% Preference Share Capital (₹ 50 each)	150.00
Reserves & Surplus (Capital Reserve)	30.00
Current Liabilities	
Trade Payable	120.00
Total (I)	**1000.00**
II. ASSETS	
Non-Current Asset	500.00
Current Assets	
Inventory	300.00
Trade Receivables	100.00
Cash & Bank balance	100.00
Total (II)	**1000.00**

Calculation of Equity Share Capital

1. Equity share capital after reconstruction	180.00
2. Issued in Cash (200×2)	400.00
3. Issued to Trade payables [50% of (60% of ₹ 400 Lacs)]	120.00
Total (1+2+3)	**700.00**

(b) The following are some of the 'sell-side' imperatives

- Competitor's pressure is increasing.
- Sale of company seems to be inevitable because company is facing serious problems like:
  - * No access to new technologies and developments
  - * Strong market entry barriers. Geographical presence could not be enhanced
  - * Badly positioned on the supply and/or demand side
  - * Critical mass could not be realised
  - * No efficient utilisation of distribution capabilities
  - * New strategic business units for future growth could not be developed
  - * Not enough capital to complete the project
- Window of opportunity: Possibility to sell the business at an attractive price
- Focus on core competencies

In the best interest of the shareholders – where a large well known firm brings-up the proposal, the target firm may be more than willing to give-up.

3. (a) Let WA, WB, WC and WD be the weights of Stock A, B, C and Debenture respectively.

W_A = 4,00,000 ÷ 20,00,000 = 0.20

W_B = 5,00,000 ÷ 20,00,000 = 0.25

Now = $W_C + W_D = 1 - W_A - W_B$ = 0.55

It is given in the question that Portfolio should be as risky as that of the market. It means Beta of the portfolio should be 1.

Hence,

W_A (0.7) + W_B (1.1) + W_C (1.6) + W_D (0) = 1

0.2 × 0.7 + 0.25 × 1.1 + 1.6W_C + W_D × 0 = 1

0.14 + 0.275 + 1.6W_C + 0 = 1

$1.6W_C = 1 - 0.415$

$1.6\ W_C = 0.585$

$W = \frac{0.585}{1.6}$

$= 0.3656$

Weight of Debenture (WD) = 1- 0.2 – 0.25 – 0.3656 = 0.1844

Hence, Amount invested in Stock C

= 0.3656 × 20,00,000

= ₹ 7,31,200

Amount invested in Debenture (D)

= 0.1844 × 20,00,000

= ₹ 3,68,800

Thus, amount to be invested in Stock (C) is ₹ 7,31,200 and in Debenture is ₹ 3,68,800.

(b)

	Growth Fund	**Balanced Fund**	**Regular Fund**	**Market**
Average Return (%)	7	6	5	9
Variance	92.16	54.76	40.96	57.76
Std. Deviation	9.60	7.40	6.40	7.60
Coefficient of Determination	0.3025	0.6561	0.9604	
Coefficient of Correlation	0.55	0.81	0.98	
Beta (β)	$\frac{9.60 \times 0.5}{5}$ $\frac{7.60}{}$ = 0.695	$\frac{7.40 \times 0.81}{7.60}$ = 0.789	$\frac{6.40 \times 0.98}{7.60}$ = 0.825	

(i) Ranking of Funds as per Sharpe Ratio

$$\text{Sharpe Ratio} = \frac{\text{Expected Return - Risk Free Rate of Return}}{\text{Standard Deviation}}$$

	Growth Fund	Balanced Fund	Regular Fund
Sharpe Ratio	$\frac{7 - 9}{9.60} = - 0.208$	$\frac{6 - 9}{7.40} = - 0.405$	$\frac{5 - 9}{6.40} = - 0.625$
Ranking	1	2	3

(ii) Ranking of Funds as per Treynor Ratio

$$\text{Treynor ratio} = \frac{\text{Expected Return - Risk Free Rate of Return}}{\text{Beta}}$$

	Growth Fund	Balanced Fund	Regular Fund
Treynor Ratio	$\frac{7 - 9}{0.695} = - 2.878$	$\frac{6 - 9}{0.789} = - 3.802$	$\frac{5 - 9}{0.825} = - 4.85$
Ranking	1	2	3

(b) As per GSR Notification 127 (E) dated 19th February 2019, an entity shall be considered as a Startup:

(i) Upto a period of ten years from the date of incorporation/ registration, if it is incorporated as a private limited company (as defined in the Companies Act, 2013) or registered as a partnership firm (registered under section 59 of the Partnership Act, 1932) or a limited liability partnership (under the Limited Liability Partnership Act, 2008) in India.

(ii) Turnover of the entity for any of the financial years since incorporation/ registration has not exceeded one hundred crore rupees.

(iii) Entity is working towards innovation, development or improvement of products or processes or services, or if it is a scalable business model with a high potential of employment generation or wealth creation.

Provided that an entity formed by splitting up or reconstruction of an existing business shall not be considered a 'Startup'.

OR

(c) Factors affecting the value of an option are:

(i) **Price Movement of the Underlying:** The value of calls and puts are **affected** by changes in the underlying stock price in a relatively straightforward manner. When the stock price goes up, calls should gain in value and puts should decrease. Put options should increase in value and calls should drop as the stock price falls.

(ii) **Time till expiry:** The option's future expiry, at which time it may become worthless, is an important and key factor of every option strategy. Ultimately, time can determine whether your option trading decisions are profitable. To make money in options over the long term, you need to understand the impact of time on stock and option positions.

With stocks, time is a trader's ally as the stocks of quality companies tend to rise over long periods of time. But time is the enemy of the options buyer. If days pass without any significant change in the stock price, there is a decline in the value of the option. Also, the value of an option declines more rapidly as the option approaches the expiration day. That is good news for the option seller, who tries to benefit from time decay, especially during that final month when it occurs most rapidly.

(iii) **Volatility in Stock Prices:** Volatility can be understood via a measure called Statistical (sometimes called historical) Volatility, or SV for short. SV is a statistical measure of the past price movements of the stock; it tells you how volatile the stock has actually been over a given period of time.

But to give you an accurate fair value for an option, option pricing models require you to put in what the future volatility of the stock will be during the life of the option. Naturally, option traders don't know what that will be, so they have to try to guess. To do this, they work the options pricing model "backwards" (to put it in simple terms). After all, you already know the price at which the option is trading; you can also find the other variables (stock price, interest rates,

dividends, and the time left in the option) with just a bit of research. So, the only missing number is future volatility, which you can calculate from the equation.

(iv) **Interest Rate**: Another feature which affects the value of an Option is the time value of money. The greater the interest rates, the present value of the future exercise price are less.

4 (a) (i) 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 is advised to hedge the risk by entering into an agreement to buy interest rate caps with the following parameters:

- National 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 lo an 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.

(ii) To evaluate the position of the borrower on respective dates we shall compute the interest cost as follows:

Dates	Interest Rate (a)	Exercise of Option	Compensation (b)	Net Cost (a) – (b)
31st March, 2013	10.20%	Yes	10.20% - 8.50% = 1.70%	8.50%
31st March, 2014	11.50%	Yes	11.50% - 8.50% = 3.00%	8.50%
31st March, 2015	9.25%	Yes	9.25% - 8.50% = 0.75%	8.50%
31st March, 2016	8.25%	No	Nil	8.25%

Thus, form above it can be evaluated that the by paying an upfront premium of ₹ 30,000 each year the borrower can ensure that its interest rate cost does not exceed 8.50% p.a.

(b) Instead of selling the stock of Reliance Ltd., Ram must cover his Risk by buying or long position in Put Option with appropriate strike price. Since Ram's risk appetite is 5%, the most suitable strike price in Put Option shall be ₹ 950 (₹ 1000 – 5% of ₹ 1000).

If Ram does so, then his overall position will be as follows:

Spot Price after 1 month	Stock Value	Put Payoff	Initial Cash Flow	Total
S < 950	S	950 – S	- 8	942 - S
S > 950	S	-	- 8	S – 8

Now assuming that the spot price after 1 month happens to be ₹ 941* per share then position of Ram will be as follows:

(₹ 950 - ₹ 941) - ₹ 8 + ₹ 941

Thus, from the above, it can be seen that the value of holding of Ram shall never be less than

₹ 942 as Put Option will compensate for loss below spot price of ₹ 950. However, this strategy will involve a cost of ₹ 8.

* Students can assume any price other than ₹ 941 and could answer accordingly

5. (a) Working Notes:

(i) Decomposition of Funds in Equity and Cash Components

	D Mutual Fund Ltd.	K Mutual Fund Ltd.
NAV on 31.12.14	₹ 70.71	₹ 62.50
% of Equity	99%	96%
Equity element in NAV	₹ 70	₹ 60
Cash element in NAV	₹ 0.71	₹ 2.50

(ii) Calculation of Beta

(a) D Mutual Fund Ltd.

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

E(R) - Rf = 22.50

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

βD = 22.50/15 = 1.50

(b) K Mutual Fund Ltd.

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

E(R) - Rf = 16.50

Treynor Ratio = 15 $= \frac{E(R)-R_f}{\beta k} = \frac{16.50}{\beta k}$

βk = 16.50/15 = 1.10

(iii) Decrease in the Value of Equity

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

(iv) Balance of Cash after 1 month

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

NAV After 1 Month

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

(b) (i) Rate of discount quoted by the bank

$$=\frac{(45.20-45.60) \times 365 \times 100}{45.60 \times 60} = 5.33\%$$

(ii) Probable loss of operating profit:

(45.20 – 45.50) × 1,00,000 = ₹ 30,000

(c) In order to be sustainable, an organisation must:

- have a clear strategic direction;
- be able to scan its environment or context to identify opportunities for its work;
- be able to attract, manage and retain competent staff;
- have an adequate administrative and financial infrastructure;
- be able to demonstrate its effectiveness and impact in order to leverage further resources; and
- get community support for, and involvement in its work.

6. (a) (i) Net Present Value (All Equity Financed) – Base NPV

Particulars	Period	USD Lakhs	PVF @ 12%	PV (USD Lakhs)
Initial Investment	0	(250.00)	1.000	(250.000)
EBIDTA	1 to 20	33.00	7.469	246.477
Tax	1 to 20	(9.90)	7.469	(73.943)
Depreciation	1 to 10	(25.00)		
Tax Saving on Dep	1 to 10	7.50	5.650	42.375
			NPV	**(35.091)**

(ii) Present Value of Impact of Financing by Debt

Particulars	Period	USD Lakhs	PVF @ 8%	PV (USD Lakhs)
Loan	0	150.00	1.000	150.000
Interest	1 to 15	(9.00)	8.559	(77.031)
Tax Saving on Interest	1 to 15	2.70	8.559	23.109
Repayment of Principal	15	(150.00)	0.315	(47.250)
			NPV	**48.828**

Adjusted Present Value of the Project

= Base NPV + PV of Impact of Financing

= - US$ 35.091 + US $ 48.828 lakh

= US$ 13.737 lakh

Advise: Since APV is positive, TL Ltd. should accept the project.

Alternatively, if instead of PV of overall impact of Financing the PV of impact of tax shield on Interest is considered then APV shall be computed as follows:

Base NPV + PV of Tax Shield on Interest

= - US$ 35.091 + US $ 23.109 lakh

= - US$ 11.982 lakh

Advise: Since APV is negative, TL Ltd. should not accept the project.

(b) **(i)** Expected Share Price

= ₹ 120X 0.05 + ₹ 140X 0.20 + ₹ 160X 0.50 + ₹ 180X 0.10 + ₹ 190X 0.15

= ₹ 6 + ₹ 28 + ₹ 80 + ₹ 18 + ₹ 28.50 = ₹ 160.50

(ii) Value of Call Option

= ₹150 - ₹150 = Nil

(c) The securitization has the following features:

(i) *Creation of Financial Instruments* – The process of securities can be viewed as process of creation of additional financial product of securities in market backed by collaterals.

(ii) *Bundling and Unbundling* – When all the assets are combined in one pool it is bundling and when these are broken into instruments of fixed denomination it is unbundling.

(iii) *Tool of Risk Management* – In case of assets are securitized on non-recourse basis, then securitization process acts as risk management as the risk of default is shifted.