MOCK TEST PAPER 2

FINAL COURSE: GROUP – I

PAPER – 2: STRATEGIC FINANCIAL MANAGEMENT

SUGGESTED ANSWERS/HINTS

1. (a) Receipts using a forward contract = $10,000,000/0.016129 = ₹ 620,001,240

Receipts using currency futures

The number of contracts needed is ($10,000,000/0.016118)/24,816,975 = 25

Initial margin payable is 25 contracts x ₹ 22,500 = ₹ 5,62,500

On April 1,2015Close at 0.016134

Receipts = US$10,000,000/0.016136 = ₹ 619,732,276

Variation Margin =

[(0.016134 – 0.016118) x 25 x 24,816,975/-]/0.016136

OR (0.000016x 25 x 24,816,975)/.016136 = 9926.79/0.016136 = ₹ 615,195

Less: Interest Cost – ₹ 5,62,500x 0.07 x 3/12 = ₹ 9,844

Net Receipts ₹ 620,337,627

Receipts under different methods of hedging

Forward contract	₹ 620,001,240
Futures	₹ 620,337,627
No hedge (US$ 10,000,000/0.016136)	₹ 619,732,276

Recommendation: Since the highest Cash Flow is in case of Future Option hence it would be the most advantageous option would have been to hedge with futures.

Total Marks = 6

(b) Working Notes:

(i) Conversion Value of Debenture

= Market Price of one Equity Share X Conversion Ratio

= ₹ 30 X 25 = ₹ 750

(ii) Market Conversion Price

$$= \frac{\text{Market Price of Convertible Debenture}}{\text{Conversion Ratio}}$$

$$\frac{1000}{25} = ₹\ 40$$

(iii) Conversion Premium per share

Market Conversion Price – Market Price of Equity Share

= ₹ 40 – ₹ 30 = ₹ 10

(iv) Favourable income differential per share

$$\frac{\text{Coupon Interest from Debenture - Conversion Ratio} \times \text{Dividend Per Share}}{\text{Conversion Ratio}}$$

$$\frac{90 - 25x1}{25} = ₹\ 2.6$$

(v) Premium pay back period

$$\frac{\text{Conversion premium per share}}{\text{Favourable Income Differntial Per Share}} = \frac{10}{2.6} = 3.85 \text{ years}$$

Analysis: Thus from above it can be analysed that:

- ❖ The Conversion Value of Debenture is less than the Market Value of Debenture because the Coupon Interest Rate is higher than Yield as Straight Value is somewhat near about the conversion value.
- ❖ If the investor adopts the route of Convertible Debenture for acquiring shares he/ she will have to pay premium over the market price.
- ❖ So far as the recovery of the premium paid for acquiring one share is concerned approximate it will take about 4 years.
- ❖ However, in case if the market price of the share is increased then of course the premium will be reduced and hence the payback period. Reverse will happen in case if the prices of the share goes below ₹ 30 per share.

Total Marks = 10

(c) Mainly Political Risk is faced by an overseas investors, as the adverse action by the government of host country may lead to huge loses. This can be on any of the following form.

- Confiscation or destruction of overseas properties.
- Rationing of remittance to home country.
- Restriction on conversion of local currency of host country into foreign currency.
- Restriction as to borrowings.
- Invalidation of Patents
- Price control of products

Total Marks = 4

2. (a) (i) To evaluate the companies based on EVA first we shall compute the of the each company as follows:

	Orange	Grape	Apple
Total debt	80,000	50,000	20,000
Post tax Cost of debt	10.40%	8.45%	9.75%
Equity Fund	20,000	50,000	80,000

WACC

Orange:	(10.4 x 0.8) + (26 x 0.2)	=	13.52%
Grape:	(8.45 x 0.5) + (22 x 0.5)	=	15.225%
Apple:	(9.75 x 0.2) + (20 x 0.8)	=	17.95%

Now we shall compute EVA of each company as follows:

	Orange	Grape	Apple
WACC	13.52	15.225	17.95
EVA [EBIT (1-T) - (WACC x Invested Capital)]	2,730	1,025	-1,700

Evaluation: Orange would be considered as the best investment since the EVA of the company is highest because of its weighted average cost of capital is the lowest while the Operating Profit of each company is same.

(ii) To evaluate the company based on share price per share we shall compute the estimated Price of each company shares as follows:

	Orange	Grape	Apple
EBIT (₹)	25,000	25,000	25,000
Interest (₹)	12,800	6,500	3,000
Taxable Income (₹)	12,200	18,500	22,000
Tax 35% (₹)	4,270	6,475	7,700
Net Income (₹)	7,930	12,025	14,300
Shares	6,100	8,300	10,000
EPS (₹)	1.30	1.45	1.43
Stock Price (EPS x PE Ratio) (₹)	14.30	15.95	15.73

Evaluation: From above table it can be seen that the price of the shares of Grape Ltd. is moderately higher than Apple Ltd. and Orange Ltd. because of following reasons:

1. The Debt/ Assets ratio is very high in case of Orange Ltd. indicating that the company is over-leverage as a major part of its assets has been financed from the Debt. Further this may be the reason that its cost of debt is quite higher.
2. Contrary to Orange Ltd. the Debt/ Assets ratio is on lower side in case of Apple Ltd. indicating that the company is not taking the benefit of cheaper cost of debt. Despite this low ratio it has quite higher cost of debt.

Thus it can be evaluated that three entities have different capital structures they would be exposed to different degrees of financial risk. The PE ratio should therefore be adjusted for the risk factor.

Total Marks = 10

(b) Working Notes:

Initial Margin $= \mu + 3\sigma$

Where μ = Daily Absolute Change

σ = Standard Deviation

Accordingly

Initial Margin = ₹ 10,000 + ₹ 6,000 = ₹ 16,000

Maintenance margin = ₹ 16,000 x 0.75 = ₹ 12,000

(i) Margin Account

Day	Changes in future Values (₹)	Margin A/c (₹)	Call Money (₹)
4/2/09	-	16000	-

5/2/09	50 x (3294.40 - 3296.50) = -105	15895	-
6/2/09	50 x (3230.40 - 3294.40) = -3200	12695	-
7/2/09	50 x (3212.30 - 3230.40) = -905	16000	4210
10/2/09	50 x (3267.50 - 3212.30) = 2760	18760	-
11/2/09	50 x (3263.80 - 3267.50) = -185	18575	-
12/2/09	50 x (3292 - 3263.80) =1410	19985	-
14/2/09	50 x (3309.30 - 3292) = 865	20850	-
17/2/09	50 x (3257.80 - 3309.30) = -2575	18275	-
18/2/09	50 x (3102.60 - 3257.80) = -7760	16000	5485

(ii) Thus, there will be two margin calls of ₹ 4,210 and ₹ 5,485.

Total Marks = 6

(c) Advantages of bringing VC in the company are as follows:

- It injects long- term equity finance which provides a solid capital base for future growth.
- The venture capitalist is a business partner, sharing both the risks and rewards. Venture capitalists are rewarded with business success and capital gain.
- The venture capitalist is able to provide practical advice and assistance to the company based on past experience with other companies which were in similar situations.
- The venture capitalist also has a network of contacts in many areas that can add value to the company.
- The venture capitalist may be capable of providing additional rounds of funding should it be required to finance growth.
- Venture capitalists are experienced in the process of preparing a company for an Initial Public Offering (IPO) of its shares onto the stock exchanges or overseas stock exchange such as NASDAQ.
- They can also facilitate a trade sale. **Total Marks = 4**

3. (a) Working Notes:

(1) Current Market Price of Bond

= ₹ 850 (PVIAF 10%, 5) + ₹ 10,000 (PVIF 10%, 5)

= ₹ 850 (3.79) + ₹ 10,000 (0.621) = ₹ 3,221.50 + ₹ 6,210 = ₹ 9,431.5

(2) Macaulay's Duration

Year	*Cash flow*	*P.V. @ 10%*		*Proportion of bond value*	*Proportion of bond value x time (years)*
1	850	0.909	772.65	0.082	0.082
2	850	0.826	702.10	0.074	0.148
3	850	0.751	638.35	0.068	0.204
4	850	0.683	580.55	0.062	0.248
5	10,850	0.621	6,737.85	0.714	3.57
			9431.50	1.000	4.252

Duration of the Bond is 4.252 years

(3) Volatility of Bond

$$\text{Volatility of Bonds} = \frac{\text{Duration}}{(1+\text{YTM})} = \frac{4.252}{1.10} = 3.865$$

(4) Convexity of Bond

$C^* \times (\Delta Y)^2 \times 100$

$C^* = \frac{V_+ + V_- - 2V_0}{2V_0 (\Delta Y)2}$

Year	Cash flow	P.V. @ 8%		P.V @12%	
1	850	0.926	787.10	0.892	758.20
2	850	0.857	728.45	0.797	677.45
3	850	0.794	674.90	0.712	605.20
4	850	0.735	624.75	0.636	540.60
5	10,850	0.681	7388.85	0.567	6,151.95
			10204.05		8,733.40

$$C^* = \frac{10,204.05 + 8,733.40 - 2 \times 9,431.50}{2 \times 9,431.50 \times (0.02)^2}$$

$$= \frac{74.45}{7.5452}$$

= 9.867

Convexity of Bond = 9.867 x $(0.02)^2$ x 100 = 0.395%

(i) The expected market price if there is a decrease in YTM by 200 basis points using Macaulay's Duration

% Change in Price of Bond	3.865 x 2% + 0.395% = 8.125%
Change in Expected Market Price	₹ 9431.50 × (8.125/100) = ₹ 766.31
Hence expected market price is	₹ 9431.50 + ₹ 766.31 = ₹ 10,197.81

(ii) The expected market price if there is a decrease in YTM by 200 basis points using Intrinsic Value method

Intrinsic Value at YTM of 10%	₹ 9,431.50
Intrinsic Value at YTM of 8%	₹ 10,204.05
Price increased by	₹ 772.55

Hence, expected market price is ₹ 10,204.05

Evaluation: Thus, from above it can be evaluated that duration combined with the convexity adjustment does a better job of estimating the sensitivity of a bond's price change.

Total Marks = 8

(b)

Particulars	**Adjusted Values ₹ crores**
Equity Shares	46.00
Cash in hand	1.23

Bonds and debentures not listed	0.80
Bonds and debentures listed	8.00
Dividends accrued	0.80
Fixed income securities	4.50
Sub total assets (A)	**61.33**
***Less:* Liabilities**	
Amount payable on shares	6.32
Expenditure accrued	0.75
Sub total liabilities (B)	**7.07**
Net Assets Value (A) – (B)	**54.26**
No. of units	20,00,000
Net Assets Value per unit (₹ 54.26 crore / 20,00,000)	₹ 271.30

Total Marks = 8

(c) To be financially sustainable, an organisation must:

- ❖ have more than one source of income;
- ❖ have more than one way of generating income;
- ❖ do strategic, action and financial planning regularly;
- ❖ have adequate financial systems;
- ❖ have a good public image;
- ❖ be clear about its values (value clarity); and have financial autonomy.

Total Marks = 4

4. (a) (i) Pay the supplier in 60 days

If the payment is made to supplier in 60 days the applicable forward rate for 1 USD	₹ 63.15
Payment Due	USD 1 crore
Outflow in Rupees (USD 1 crore × ₹ 63.15)	₹ 63.15 crore
Add: Interest on loan for 30 days@9.5% p.a.	₹ 0.50 crore
Total Outflow in ₹	₹ 63.65 crore

(ii) Availing supplier's offer of 90 days credit

Amount Payable	USD 1.00000 crore
Add: Interest on credit period for 30 days@7.75% p.a.	USD 0.00646 crore
Total Outflow in USD	USD 1.00646 crore
Applicable forward rate for 1 USD	₹ 63.45
Total Outflow in ₹ (USD 1.00646 crore ×₹ 63.45)	₹ 63.86 crore

Advise: Alternative 1 is better as it entails lower cash outflow.

Total Marks = 8

(b) (i) To calculate expected return on Market Index first using APT we shall compute the each Stock's return as follows:

Stock's return

Small cap growth = 4.5 + 0.80 x 6.85 + 1.39 x (-3.5) + 1.35 x 0.65 = 5.9925%

Small cap value = 4.5 + 0.90 x 6.85 + 0.75 x (-3.5) + 1.25 x 0.65 = 8.8525%

Large cap growth = 4.5 + 1.165 x 6.85 + 2.75 x (-3.5) + 8.65 x 0.65 = 8.478%

Large cap value = 4.5 + 0.85 x 6.85 + 2.05 x (-3.5) + 6.75 x 0.65 = 7.535%

Expected return on market index

0.25 x 5.9925 + 0.10 x 8.8525 + 0.50 x 8.478 + 0.15 x 7.535 = 7.7526%

Alternatively, it can also be calculated as follows:

Expected return on the market index

= 4.5% + [0.1x0.9 + 0.25x0.8 + 0.15x0.85 + 0.50x1.165] x 6.85 + [(0.75 x 0.10 + 1.39 x 0.25 + 2.05 x 0.15 + 2.75 x 0.5)] x (-3.5) + [{1.25 x 0.10 + 1.35 x 0.25 + 6.75 x 0.15 + 8.65 x 0.50)] x 0.65

= 4.5 + 6.85 + (-7.3675) + 3.77 = 7.7525%.

(ii) To calculate expected return on Market Index first using CAPM we shall compute the each Stock's return as follows:

Small cap growth = 4.5 + 6.85 x 0.80 = 9.98%

Small cap value = 4.5 + 6.85 x 0.90 = 10.665%

Large cap growth = 4.5 + 6.85 x 1.165 = 12.48%

Large cap value = 4.5 + 6.85 x 0.85 = 10.3225%

Expected return on market index

= 0.25 x 9.98 + 0.10 x 10.665 + 0.50 x 12.45 + 0.15 x 10.3225 = 11.33%

(iii) Let us assume that Mr. Nirmal will invest X_1% in small cap value stock and X_2% in large cap growth stock

$X_1 + X_2 = 1$

$0.90\ X_1 + 1.165\ X_2 = 1$

$0.90\ X_1 + 1.165(1 - X_1) = 1$

$0.90\ X_1 + 1.165 - 1.165\ X_1 = 1$

$0.165 = 0.265\ X_1$

$\frac{0.165}{0.265} = X_1$

$0.623 = X_1$, $X_2 = 0.377$

Advise: Thus, Mr. Nirmal should invest 62.3% of his funds in small cap value and balance 37.7% in large cap growth. **Total Marks = 8**

(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 basically using PowerPoint to provide a quick overview of business plan and convincing the investors to put some money into the

business. Pitch presentation can be made either during face to face meetings or online meetings with potential investors, customers, partners, and co-founders. **Total Marks = 4**

5. (a) To analyse investments from Risk-Return view point first we shall compute the SD of each investment as follows:

M Ltd.

Exp. market value	*Exp. gain*	*Exp. div.*	*Exp Yield (1)*	*Prob. Factor (2)*	*(1) X (2)*	*Dev. (P_M- $\overline{P_M}$)*	*Square of dev. (3)*	*(2) X (3)*
220	0	20	20	0.2	4	-33	1089	217.80
250	30	20	50	0.5	25	-3	9	4.50
280	60	20	80	0.3	24	27	729	218.70
					53			σ^2_M = 441.00

Standard Deviation (σ_M) 21

N Ltd.

Exp. market value	*Exp. gain*	*Exp. div.*	*Exp Yield (1)*	*Prob. Factor (2)*	(1) X (2)	*Dev. (P_N- $\overline{P_N}$)*	*Square of dev. (3)*	(2) X (3)
290	0	3.5	3.5	0.2	0.7	-22	484	96.80
310	20	3.5	23.5	0.5	11.75	-2	4	2.00
330	40	3.5	43.5	0.3	13.05	18	324	97.20
					25.5			σ^2_N = 196.00

Standard Deviation (σ_N) 14

Analysis: Thus, from above it can be seen that since N Ltd. has lesser SD and it is lesser riskier. However, to analyse the investments from risk-return trade off view point we shall compute of Coefficient of Variation (CV) of each investment as follows:

$$\text{M Ltd.} = \frac{SD}{Mean} \times 100 = \frac{21}{53} \times 100 = 39.62\%$$

$$\text{N Ltd.} = \frac{SD}{Mean} \times 100 = \frac{14}{25.50} \times 100 = 54.90\%$$

Thus, from risk-reward trade off view point investment in M Ltd. is better.

Alternatively based on return in percentage terms Standard Deviation can also be computed as follows:

M Ltd.

Exp. market value	*Exp. gain*	*Exp. div.*	*Exp Return (1)*	*Prob. Factor (2)*	(1) X(2)	*Dev. (P_M- $\overline{P_M}$)*	*Square of dev. (3)*	(2) X (3)
220	0	20	9.09	0.2	1.82	-15.01	225.30	45.06
250	30	20	22.73	0.5	11.37	-1.37	1.88	0.94
280	60	20	36.36	0.3	10.91	12.26	150.31	45.09
					24.10			σ^2_M = 91.09

Standard Deviation (σ_M) 9.54%

N Ltd.

Exp. market value	*Exp. gain*	*Exp. div.*	*Exp Return (1)*	*Prob. Factor (2)*	(1) X(2)	*Dev.* $(P_N - \overline{P_N})$	*Square of dev. (3)*	(2) X (3)
290	0	3.5	1.21	0.2	0.24	-7.58	57.46	11.49
310	20	3.5	8.10	0.5	4.05	-0.69	0.48	0.24
330	40	3.5	15.00	0.3	4.50	6.21	38.56	11.57
					8.79			σ^2_N = 23.30

Standard Deviation (σ_N) 4.83%

Analysis: Thus, from above it can be seen that since N Ltd. has lesser SD and it is lesser riskier. However, to analyse the investments from risk-return trade off view point we shall compute of Coefficient of Variation (CV) of each investment as follows:

$$\text{M Ltd.} = \frac{\text{SD}}{\text{Mean}} \times 100 = \frac{9.54}{24.10} \times 100 = 39.59\%$$

$$\text{N Ltd.} = \frac{\text{SD}}{\text{Mean}} \times 100 = \frac{4.83}{8.79} \times 100 = 54.95\%$$

Thus, from risk-reward trade off view point investment in M Ltd. is better.

Total Marks = 8

(b) Working Notes:

Net Issue Size = $ 8.82 million

$$\text{Gross Issue} = \frac{8.82}{0.98} = \$9.00 \text{ million}$$

Issue Price per GDR in ₹ (360 x 2 x 90%)	₹ 648
Issue Price per GDR in $ (₹ 648/ ₹ 72)	$ 9.00
Dividend Per GDR (D_1) = ₹ 20 x 2 =	₹ 40
Net Proceeds Per GDR = ₹ 648 x 0.98 =	₹ 635.04

(i) Number of GDR to be issued

$$\frac{\$ 9.00 \text{ million}}{\$ 9} = 1.00 \text{ million}$$

(ii) To advise the company about the cheapest option first we shall compute the Cost of GDR as follows:

$$k_e = \frac{40.00}{635.04} + 0.12 = 18.30\%$$

If the company receives an offer from US Bank willing to provide an equivalent amount of loan with interest rate of 12%, it should accept the offer because there will be net saving of 6.30%.

Total Marks = 8

(c) Yes, to some extent this statement is correct because 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.

(iv) Structured Finance – In the process of securitization, financial instruments are tailor structured to meet the risk return trade of profile of investor, and hence, these securitized instruments are considered as best examples of structured finance.

(v) Trenching – Portfolio of different receivable or loan or asset are split into several parts based on risk and return they carry called 'Tranche'. Each Trench carries a different level of risk and return.

(vi) Homogeneity – Under each tranche the securities issued are of homogenous nature and even meant for small investors who can afford to invest in small amounts.

OR

Yes to some extent the given statement is correct as it is a technique of optimising cash flow movements with the combined efforts of the subsidiaries thereby reducing administrative and transaction costs resulting from currency conversion. There is a co-ordinated international interchange of materials, finished products and parts among the different units of MNC with many subsidiaries buying /selling from/to each other.

Advantages derived from netting system includes*:*

1) Reduces the number of cross-border transactions between subsidiaries thereby decreasing the overall administrative costs of such cash transfers

2) Reduces the need for foreign exchange conversion and hence decreases transaction costs associated with foreign exchange conversion.

3) Improves cash flow forecasting since net cash transfers are made at the end of each period

4) Gives an accurate report and settles accounts through co-ordinated efforts among all subsidiaries.

Total Marks = 4

6. (a) (i) Working Notes:

(1) Calculation of Book Value Per Share

Particulars	**Weak Bank (W)**	**Strong Bank (S)**
Share Capital (₹ Lakhs)	150	500
Reserves & Surplus (₹ Lakhs)	80	5,500
	230	6,000
Less: Preliminary Expenses (₹ Lakhs)	50	--
Net Worth or Book Value (₹ Lakhs)	180	6,000
No. of Outstanding Shares (Lakhs)	15	50
Book Value Per Share (₹)	12	120

(2) Swap Ratio

Gross NPA	5:40	5/40 x 30%	0.0375
CAR	5:16	5/16 x 28%	0.0875
Market Price	12:96	12/96 x 32%	0.0400
Book Value Per Share	12:120	12/120x 10%	0.0100
			0.1750

Thus, for every share of Weak Bank, 0.1750 share of Strong Bank shall be issued.

(3) No. of equity shares to be issued:

$$\frac{150}{10} \times 0.1750 = 2.625 \text{ lakh shares}$$

(4) Calculation of Capital Reserve

Book Value of Shares	₹ 180.00 lac
Less: Value of Shares issued	₹ 26.25 lac
Capital Reserve	₹ 153.75 lac

Balance Sheet after Merger

	₹ lac		₹ lac
Paid up Share Capital	526.25	Cash in Hand & RBI	2900.00
Reserves & Surplus	5500.00	Balance with other banks	2000.00
Capital Reserve	153.75	Investment	20100.00
Deposits	48000.00	Advances	30500.00
Other Liabilities	3390.00	Other Assets	2070.00
	57570.00		**57570.00**

(ii) Woking Notes:

(1) Calculation CAR % of Bank 'S' after merger

$$\text{CAR / CRWAR} = \frac{\text{Total Capital}}{\text{Risky Weighted Assets}}$$

	Weak Bank	Strong Bank	Merged
Capital Adequacy Ratio (CAR)	5%	16%	
Total Capital	₹ 180 lac	₹ 6000 lac	₹ 6180 lac
Risky Weighted Assets	₹ 3600 lac	₹ 37500 lac	₹ 41100 lac

$$\text{CAR after merger} = \frac{6180}{41100} \times 100 = 15.04\%$$

(2) Calculation of Gross NPA % of Bank 'S' after merger

$$\text{GNPA Ratio} = \frac{\text{Gross NPA}}{\text{Gross Advances}} \times 100$$

	Weak Bank	Strong Bank	Merged
GNPA (Given)	0.40	0.05	
	$0.40 = \frac{GNPA_R}{₹\ 3500\ lac}$	$0.05 = \frac{GNPA_S}{₹\ 27000\ lac}$	
Gross NPA	₹ 1400 lac	₹ 1350 lac	₹ 2750 lac

$$\text{GNPA Ratio} = \frac{2750}{30500} \times 100 = 9.02\%$$

Analysis: Thus, from above it can be analysed that CAR is slightly reduced from 16% to 15.04%. However, GNPA has been almost doubled. **Total Marks = 10**

(b) **(i)** Total premium paid on purchasing a call and put option

= (₹30 per share × 100) + (₹5 per share × 100).

= 3,000 + 500 = ₹3,500

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

Ending value = - ₹ 3,500 + zero gain = - ₹ 3,500

i.e. Net loss = ₹ 3,500

(ii) 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 = ₹ 3,500

Ending value = – ₹ 3,500 + ₹ [(450 – 350) × 100] = – ₹ 3,500 + ₹ 10,000 = ₹ 6,500

∴ Net gain = ₹ 6,500

(iii) 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 = ₹ 3,500

Ending value = -3,500 + [(600 – 550) × 100]

Net Gain = -3,500 + 5,000 = ₹1,500 **Total Marks = 6**

(c) Tracking error can be used to measure the divergence or deviation of a fund's return from the benchmarks return it is following.

The passive fund managers closely follow or track the benchmark index. Although they design their investment strategy on the same index but often it may not exactly replicate the index return. In such situation, there is possibility of deviation between the returns.

The tracking error can be calculated on the basis of corresponding benchmark return vis a vis quarterly or monthly average NAVs.

Higher the tracking error higher is the risk profile of the fund. Whether the funds outperform or underperform their benchmark indices; it clearly indicates that of fund managers are not following the benchmark indices properly. In addition to the same other reason for tracking error are as follows:

- Transaction cost
- Fees charged by AMCs
- Fund expenses
- Cash holdings
- Sampling biasness

Thus, from above it can be said that to replicate the return to any benchmark index the tracking error should be near to zero.

The Tracking Error is calculated as follows:

$$TE = \sqrt{\frac{\sum\left(d - \bar{d}\right)^2}{n-1}}$$

d = Differential return

$\bar{d}$ = Average differential return

n = No. of observation **Total Marks = 4**