

Your overall performance is good. Revise all your previous topics at least once in a week rather allocate a day in a week for revision and evaluating your performance. This will help you memorize topics and bind out shortcomings in your preparation.

**Total Marks 33.5**

Period	X	Y	X <sup>2</sup>	Y <sup>2</sup>	XY
1	33453.99				
2	33434.83	-19.16	367.11		
3	33431.93	-2.9	8.41		
4	33383.41	-48.52	2354.19		
5	33370.93	-112.48	155.75		
6	33340.50	-30.43	910.83		
7	33330.98	-9.52	95.45		
8	33335.05	1.07	16.81		
9	33301.97	-37.08	1096.27		
10	33259.03	-42.94	1843.84		
		-194.96	6848.66		

Period	X	Y	X <sup>2</sup>	Y <sup>2</sup>	XY
1	33251.53				
12	33285.89	34.36	1180.61		-658.34
13	33329.28	43.39	1882.69		-125.83
14	33284.17	-45.41	2034.91		-2188.74
15	33298.7	14.61	213.45		-182.33
16	33325.38	26.6	707.56		-802.79
17	33329.55	4.57	20.88		-44.65
18	33319.67	-10.28	105.68		574.46
19	33302.32	-17.35	301.02		742.4
20	33319.61	17.29	298.94		742.43
		-194.96	6745.74		164.68
		68.08			

$$\bar{X} = \frac{-194.96}{9} = -21.66 ; \bar{Y} = \frac{68.08}{9} = 7.56$$

$$b = \frac{\sum XY - n \bar{X} \bar{Y}}{\sum X^2 - n (\bar{X})^2}$$

**6 Marks**

**Good attempt**

$$b = \frac{164.68 - 9 \times (-21.66) \times 7.56}{(26848.66) - 9 \times (-21.66)^2}$$

$$b = \frac{1638.4264}{2626.2596} = 0.624$$

Q2

To test for weak form of market efficiency.

$$a = \bar{Y} - b\bar{X} \Rightarrow 7.56 - 0.624 \times (-21.66)$$

$$\Rightarrow 21.08$$

$$r^2 = \frac{a \times \sum Y + b \times \sum XY - n(\bar{Y})^2}{\sum Y^2 - n \times \bar{Y}^2}$$

$$\Rightarrow \frac{21.08 \times 68.08 + 0.624 \times 164.68 - 9 \times (7.56)^2}{6745.74 - 9 \times (7.56)^2}$$

$$\frac{1023.5043 + 102.88672 - 510.432}{6745.74 - 510.432}$$

$$\Rightarrow \frac{615.95892}{6231.308} = 0.2468 \approx 0.164$$

$$\therefore r = 0.405$$

∴ we can say that there exist a degree of correlation between the two periods. which concludes that the market is not in weak form of efficiency.



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Ans to Q3

6 Marks

Rm	Prob.	Rm x Prob.	Rm - x (4)	(4) <sup>2</sup>	4 <sup>2</sup> x Prob.
-0.07	0.25	-0.0175	-0.204	0.041616	0.010410
0.12	0.1	0.012	-0.0145	0.0002	0.00002
0.2	0.15	0.03	0.0655	0.004319	0.000648
0.25	0.2	0.05	0.1155	0.01334	0.00267

Good Conceptual understanding

Expected Ret in mkt: 13.45%  
 HRF var: 0.01502  
 m = 2.26%

RA	Prob.	RA x Prob.	RA - y	(RA - y) <sup>2</sup>	4 x (RA - y)	4 x RA x Prob.
-0.15	0.25	-0.0375	-0.319	0.065076	0.0162	0.0162
.19	0.1	0.019	0.021	-0.0003045	0.000002	0.000002
.35	0.45	0.1575	0.181	0.0118555	0.005316	0.005316
.15	0.2	0.03	-0.019	0.00021945	-0.00044	-0.00044

y: 0.169

Expected Return (A): 16.9%

0.01220  
 0.01220

R <sub>B</sub>	Prob.	R <sub>B</sub> x Prob.	R <sub>B</sub> - 2	(R <sub>B</sub> - 2) <sup>2</sup>	4 x (R <sub>B</sub> - 2)	4 x R <sub>B</sub> x Prob.
-0.08	0.25	-0.02	-2.035	0.041514	0.010178	0.010178
-0.05	0.1	-0.005	-1.735	0.00251575	0.00251575	0.00251575
0.25	0.45	0.1125	0.1265	0.0002091	0.00378858	0.00378858
0.18	0.2	0.036	0.0565	0.00652171	0.0030515	0.0030515

z = 0.1235

Expected Ret (B) 12.35%

Beta A  $\rightarrow \frac{\text{Cov A x Market}}{\sigma^2_m} = \frac{0.01220}{0.01502} = 1.41$

Beta B  $\rightarrow \frac{\text{Cov B x Market}}{\sigma^2_m} = \frac{0.01566}{0.01502} = 1.04$

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Given  $R_f = 7\%$ ,  $R_m = 13.45\%$ ,  $\beta_A = 1.41$   
 Req'd. Return  $\Rightarrow 7\% + 1.41 \times (13.45 - 7) = 16.09\%$

Since: Expected Return (16.09%) is more than Req'd Return on Inv. (16.09%)  
 from such investment, therefore Stock A is undervalued by 0.81%.

Given  $R_B = 12.35\%$ , Beta  $\beta = 1.04$ .

Req'd Ret  $\Rightarrow 7 + 1.04(13.45 - 7) = 13.71\%$

Since Expected Return (12.35%) is less than Req'd Return (13.71%)  
 therefore the Stock B is overvalued by 1.36%.

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Ans to Q 4

8 Marks

Investment in 'H Ltd'  $\Rightarrow$  200000, i.e., 5%  
 N Ltd 150000, i.e., 43%  
 Total 350000

for 2010; Return from Dividend

H Ltd	N Ltd
10	3
$[1000 \times \frac{10}{100} \times 10\%]$	$[10 \times 30\%]$

Capital Gain.  $A - B = C$   
 A  $\rightarrow$  value on 31.3.20  
 B  $\rightarrow$  Purchase value.

20	10
220	290
200	300
$[200000/1000]$	$[150000/500]$

Total Yield C + D  
 Return on Investment (%)

30	-7
150%	-2.33%
$(\frac{30}{200000} \times 100)$	$\frac{-7}{300} \times 100$



Pgs

∴ wgt avg Return  $\Rightarrow 15\% \times 0.57 + (-2.33) \times 0.43\%$   
 $\Rightarrow 7.51\%$  (approx)

**Good Attempt**

for 31.3.2011

Cal of Price @ 31.3.2011	MLH	NLH
Probability	MLH	NLH
0.2	220	290
0.5	250	310
0.3	280	330
	<u>253</u>	<u>312</u>
Probable Price	253	312

Dividend D	20	35
	$(100 \times 20\%)$	$(100 \times 35\%)$

Capital Gain (A-B)	33	22
Price on 31.3.2011	253	312
on 31.3.	220	290

Total Yield D+L	53	55
% of investment	24.09%	8.79%
	$\left(\frac{53}{220} \times 100\right)$	$\left(\frac{25}{290} \times 100\right)$

Portfolio value	220,000	145,000
	$(220 \times 1000)$	$(290 \times 500)$
wgt average $\Rightarrow 24.09\% \times 0.57 + 8.79\% \times 0.43$		

$\Rightarrow 17.51\%$

wgt of stocks	60.27	39.73%
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wgt average return for 2011.3.3  $\Rightarrow 24.09\% \times 0.6027 + 8.79\% \times 0.3973$

$\Rightarrow 18.01\%$

g6

(c) for comparative deviation for both stock we should calculate cor standard

MLH

Mkt value	Prob. factor	Dev.	Cap gain	Total Yield	Yield Prob.	Deviation	Deviation <sup>2</sup>
220	0.2	20					
250	0.5	20	20	20	4	-33	1089
280	0.3	20	50	50	25	-2	9
			80	80	24	27	729
					53		

Deviation<sup>2</sup> x Prob.

217.8

4.50

218.70

$\sigma_m^2 = 441$

$\therefore SD \text{ of MLH} = \sqrt{441} = 21$

NLH

Mkt value	Prob. factor	Dev	Cap gain	Total	4x1	Deviation	(6) <sup>2</sup>	62 x 1.
					Gain (4) = (5)	(6)		
290	.2	3.5	0	3.5	0.7	-22	484	96.8
310	.3	3.5	20	23.5	11.75	-2	4	2.
330	.3	3.5	40	43.5	13.05	18	324	97.2
				5	25.5			196.

$\sigma_m^2 = 196 \therefore SD \text{ of NLH} = 14.$

Since SD of MLH is more than SD of NLH (21) (14)

$\therefore M$  is more riskier stock.



Q 7.

Ans to Q5

Total Investment made by bank.

Bond	FV of Invest	Cost per bond	Total Investment	Proportion Investment
6.01.2009	500,00,000	106.50	532,50,000	0.1895
2012	500,00,000	105	525,00,000	0.2019
2015	500,00,000	105	525,00,000	0.199
2022	500,00,000	110	550,00,000	0.2085
2032	500,00,000	101	505,00,000	0.1918
			26,37,50,000	1

6 Marks

Duration of Bond.	Weight Duration.
3.50	0.70665
6.50	1.2935
7.50	1.4925
8.75	1.0824375
13.00	2.04908

You have attempted this answer very nicely.

If the interest rates changes, but the bank wants to maintain the existing duration, then we will need to immunize the portfolio so that the change in interest rates does not change the duration of the portfolio.

Q8

If the interest rates are expected to lower by 25 basis points, then the <sup>to counter</sup> duration of the bond increasing, the bank should either

sell long duration bonds and buy short duration bond or could either buy shorter duration bond if they have excess surplus of cash.

However if the interest rate are expected to increase by 25 basis points, then to counter the decrease in the duration of bond, the bank should

sell shorter duration of bond held in portfolio and buy longer duration of bond; or if they have excess funds to invest for longer duration, then can buy the long duration bonds.

Q9

Ans to Q6

Venture Capital financing has the following characteristics -

**4 Marks**

Long time horizon - The minimum period for investment as venture capitalist is 3 years and the maximum could be upto 10 years, therefore, these type of funding have long time horizon.

**Good Understanding**

Lack of liquidity - Since the funds are investments for a long time, the liquidity of the equity invested is low, hence they invest keeping in view the fact and thus expect the return accordingly.

High risk - Venture capitalists are risk takers and they work on the principle of high risk, high return; that is why invest in this form in startups.



Equity Participation - VC's invest in startup in the form of equity. This helps the VC in the participation of the management of the company.

Ans to Q2.

The Given statement is correct -  
Arguments for technical Analysis.

- (a) The change in the demand and supply is not instantaneous but rather on a period of time, hence trend analysis helps in detecting the change.
- (b) Fundamental information about a company is known, observed and absorbed by the market over a period of time, hence trend analysis can be used to predict the movement of price w.r.t. information processed by the market.
- (c) Crowd psychology says that a trend persists for a some time. Technical analysis could be helpful in decision making.

**3.5 Marks**

Arguments against trend analysis.

- (a) They don't offer convincing explanation for its tools and assumptions.
- 2) Random walk hypothesis over shadows trend analysis.
- 3) Some times, trends have already taken place, by the time an analysis is made on them.