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Internal Assessment Test - I

Sub:	Investment Management					Code:	18MBAFM302		
Date:	7/9/2019	Duration:	90 mins	Max Marks:	50	Sem:	III	Branch:	MBA

Marks	OBE	
	CO	RBT
[03]	CO1	L1
[07]	CO2	L2
[10]	CO1	L3

Part A - Answer Any Two Full Questions (2* 20 = 40 marks)

1 (a) Define investment

Investing is the act of allocating funds to an asset or committing capital to an endeavor (a business, project, real estate, etc.), with the expectation of generating an income or profit. In colloquial terms, investing can also mean putting in time or effort - not just money - into something with a long-term benefit, such as an education.

(b) Explain the investment process in detail

Investment management is a complex activity which may be broken down into the following steps:

- Specification of Investment Objectives and constraints.
- Choice of the asset mix
- Formulation of portfolio strategy
- Selection of securities
- Portfolio execution.
- Portfolio revision.
- Portfolio evaluation.

(c) Calculate total return and return relative from the following information relating to stock A, B and C.

Stocks	Market price at the beginning of 2017 (in `)	Market price at the end of 2017 (in `)	Dividend Paid (in `)
A	4,250	4,700	45
B	1,500	1,200	22
C	800	1,050	18

2 (a) Differentiate between speculator and investor

[03]

Investor Vs Speculator

Basis	Investor	Speculator
1. Time Horizon	Plans for longer time horizon Holding period may be from 1 year to few years	Plans for a very short period. Holding period varies from few days to few months.
2. Risk	Assumes moderate risk	Willing to take high risk.
3. Return	Likes to accept moderate rate of return associated with limited risk	Expects high rate of return for assuming high risk
4. Decision	Considers fundamental factors and evaluates the performance of the company regularly	Considers insiders information, hearsay and rumors.
5. Usage of funds	Investors use his own funds and avoid borrowed funds	Speculator uses borrowed funds to supplement his personal resources.
6. Stability of income or investment	Very stable	Uncertain and erratic
7. Psychological attitude	Cautious, Conservative	Believes on hunches, tips or rumors etc.

	CO2	L2
	CO1	L2
	CO1	L3
	CO2	L1

(b) Discuss the features of investment

[07]

1. Rate of Return
2. Risk
3. Marketability
4. Safety
5. Tax shelter
6. Convenience
7. Liquidity.

(c) Calculate risk of the following stocks through variance and standard deviation and give the stock of your preference using risk-return analysis.

[10]

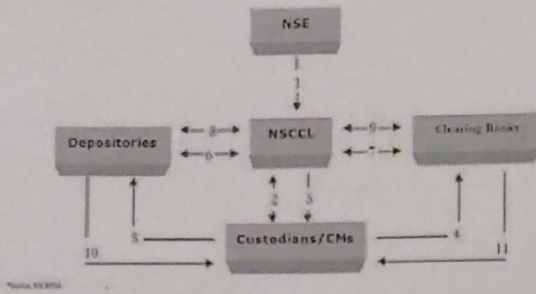
State of Economy	Probability	Returns on stocks (%)	
		A	B
Boom	0.35	22	30
Normal	0.25	16	25
Recession	0.40	12	15

3 (a) Define right issue

[03]

A rights issue or rights offer is a dividend of subscription rights to buy additional securities in a company made to the company's existing security holders. When the rights are for equity securities, such as shares, in a public company, it is a non-dilutive (can be dilutive) pro rata way to raise capital.

(b) Outline the clearing and settlement process followed by NSE



[07] CO2 L4

(c) Mr. Anand is considering the purchase of 3 securities A, B and C for the next three year. The returns of the securities depend on next year's state of the stock market. The estimated rates of return are shown in the table.

State of the market	Probability	Rates of return		
		A(%)	B(%)	C(%)
Recession	0.25	10	9	14
Average	0.50	14	13	12
Boom	0.25	16	18	10

[10] CO1 L3

- Find each stock's expected return.
- Determine the standard deviation of each stock.

If Anand invest one third in each security, what would be his portfolio risk and return?

Part B - Compulsory (01*10=10 marks)

4 The following details are related with 3 stocks are given below

Probability	Returns(In %)		
	Stock X	Stock Y	Stock Y
0.3	9	4	6
0.5	15	12	10
0.2	18	15	14

[10] CO1 L3

Find out:

- Expected return and risk of individual securities
- Expected return and risk of portfolio if the proportion of investment in each of the securities are:

Security	X	Y	Z
Proportion of investment	30%	45%	25%

Solutions for the numericals
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1c. Calculation of total return and Relative Return:

Formula for

$$E(R) = \frac{\text{Annual Income} + (\text{End Price} - \text{Beg Price})}{\text{Beg. Price}} \times 100$$
 (or) Total Return

Relative Return = $1 + TR$

Stock A	TR	RR
$\frac{45 + (4750 - 4250) \times 100}{4250} =$	11.64 %	$1 + 11.64 = 12.64 \%$
$\frac{22 + (1200 - 1500) \times 100}{1500} =$	-18.53 %	17.53 %
$\frac{18 + (1050 - 800) \times 100}{800} =$	33.5 %	34.5 %

2c.

Stock A

p	R	pi	$(R - \bar{R})^2 \times p$
0.35	22	7.7	$(5.5)^2 \times 0.35 = 10.88$
0.25	16	4	$(16 - 16.5)^2 \times 0.25 = 0.062$
0.40	12	4.8	$(12 - 16.5)^2 \times 0.40 = 8.1$

$E(R) = 16.5\%$
 $\bar{R} =$

Variance = 18.74

$\sigma = \sqrt{18.74} = 4.32\%$

Stock B

p	R	pi	$(R - \bar{R})^2 \times p$
0.35	30	10.5	$(30 - 22.75)^2 \times 0.35 = 18.39$
0.25	25	6.25	$(25 - 22.75)^2 \times 0.25 = 1.26$
0.40	15	6	$(15 - 22.75)^2 \times 0.40 = 24.02$

$E(R) = 22.75\%$
 $\bar{R}_B =$

Variance = 43.67

$\sigma = \sqrt{43.67} = 6.60$

	$E(R)$	σ	<u>Return/Risk</u>
A	16.5%	4.32%	$16.5 / 4.32 = 3.81\%$
B	22.75%	6.60	$22.75 / 6.60 = 3.44\%$

Inference It is advisable to make a investment in stock A as its Return per unit of Risk is maximum.

3c)

Stock A

p	R	$f_i p_i$	$(R - \bar{R})^2 \times p_i$
0.25	10	2.50	$(10 - 13.50)^2 \times 0.25 = 3.06$
0.50	14	7	$(14 - 13.50)^2 \times 0.50 = 0.125$
0.25	16	4	$(16 - 13.50)^2 \times 0.25 = 1.56$
$\bar{R} = 13.50$ $E(R)$			<u>Variance = 4.745</u> $\sigma = \sqrt{4.745} = 2.18\%$

Stock B

p	R	$f_i p_i$	$(R - \bar{R})^2 \times p_i$
0.25	9	2.25	$(9 - 40)^2 \times 0.25 = 240.25$
0.50	13	6.50	$(13 - 40)^2 \times 0.50 = 364.5$
0.25	18	4.50	$(18 - 40)^2 \times 0.25 =$
$\bar{R} = 40$			<u>Variance = 604.75</u> $\sigma = 25\%$

Stock C :

p	R	$f_i p_i$	$(R - \bar{R})^2 \times p_i$
0.25	14	3.5	$(14 - 12)^2 \times 0.25 = 1$
0.50	12	6	$(12 - 12)^2 \times 0.50 = 0$
0.25	10	2.5	$(10 - 12)^2 \times 0.25 = 1$
$\bar{R} = 12$			<u>Variance = 2</u> $\sigma = \sqrt{2} = 1.414$

Part B

4 a).

Calculation of $E(R)$ for each security.

Stock X

f_i	R	$f_i R_i$	$(R - \bar{R})^2 \times f_i$
0.3	9	2.7	$(9 - 13.8)^2 \times 0.3 = 6.912$
0.5	15	7.5	$(15 - 13.8)^2 \times 0.5 = 0.72$
0.2	18	3.6	$(18 - 13.8)^2 \times 0.2 = 3.52$
$\bar{R} = 13.8$			Variance = <u>11.16</u>

$\sigma = \sqrt{11.16} = 3.34\%$

Stock Y

f_i	R	$f_i R_i$	$(R - \bar{R})^2 \times f_i$
0.3	4	1.2	$(4 - 10.2)^2 \times 0.3 = 11.53$
0.5	12	6	$(12 - 10.2)^2 \times 0.5 = 1.62$
0.2	15	3	$(15 - 10.2)^2 \times 0.2 = 4.61$
$\bar{R} = 10.2$			Variance = <u>17.76</u>

$\sigma = \sqrt{17.76} = 4.21\%$

Stock Z

f_i	R	$f_i R_i$	$(R - \bar{R})^2 \times f_i$
0.3	6	1.8	$(6 - 9.6)^2 \times 0.3 = 3.89$
0.5	10	5	$(10 - 9.6)^2 \times 0.5 = 0.08$
0.2	14	2.8	$(14 - 9.6)^2 \times 0.2 = 3.87$
$\bar{R} = 9.6$			Variance = <u>7.84</u>

$\sigma = \sqrt{7.84} = 2.8\%$

calculation of portfolio Risk

$$\sigma = \sqrt{x_1^2 \sigma_1^2 + x_2^2 \sigma_2^2 + x_3^2 \sigma_3^2 + 2x_1 x_2 (\rho_{12} \sigma_1 \sigma_2) + 2x_2 x_3 (\rho_{23} \sigma_2 \sigma_3) + 2x_1 x_3 (\rho_{13} \sigma_1 \sigma_3)}$$

$$Cov_{12} = \sum y_i (R_{i1} - \bar{R}_1)(R_{i2} - \bar{R}_2)$$

$$= 0.3(9-13.8)(4-10.2) + 0.5(15-13.8)(12-10.2) + 0.2(18-13.8)(15-10.2) = \underline{\underline{14.03}}$$

$$Cov_{23} = 0.3(4-10.2)(6-9.6) + 0.5(12-10.2)(10-9.6) + 0.2(15-10.2)(14-9.6)$$

$$= 0.3(4-10.2)(6-9.6) + 0.5(12-10.2)(10-9.6) + 0.2(15-10.2)(14-9.6) = \underline{\underline{11.27}}$$

$$Cov_{13} = 0.3(9-13.8)(6-9.6) + 0.5(15-13.8)(10-9.6) + 0.2(18-13.8)(14-9.6)$$

$$= 0.3(9-13.8)(6-9.6) + 0.5(15-13.8)(10-9.6) + 0.2(18-13.8)(14-9.6) = \underline{\underline{9.11}}$$

$$\rho_{12} = \frac{Cov_{12}}{\sigma_1 \sigma_2} = \frac{14.03}{(3.33)(4.21)} = \underline{\underline{1}}$$

$$\rho_{23} = \frac{Cov_{23}}{\sigma_2 \sigma_3} = \frac{11.27}{(4.21)(2.79)} = 0.95$$

$$\rho_{13} = \frac{Cov_{13}}{\sigma_1 \sigma_3} = \frac{9.11}{(3.33)(2.79)} = 0.98$$

$$\sigma = \sqrt{x_1^2 \sigma_1^2 + x_2^2 \sigma_2^2 + x_3^2 \sigma_3^2 + 2x_1 x_2 (\rho_{12} \sigma_1 \sigma_2) + 2x_2 x_3 (\rho_{23} \sigma_2 \sigma_3) + 2x_1 x_3 (\rho_{13} \sigma_1 \sigma_3)}$$

$$\sigma = \sqrt{(0.3)^2 (3.33)^2 + (0.45)^2 (4.21)^2 + (0.25)^2 (2.79)^2 + 2(0.3)(0.45)(1)(3.33)(4.21) + 2(0.45)(0.25)(0.95)(4.21)(2.79) + 2(0.3)(0.25)(0.98)(3.33)(2.79)}$$

$$\sigma = \sqrt{12.64}$$

$$\sigma = 3.55 \%$$