OBE

Part A – Answer Any Two Full Questions (2*20=40 Marks)

	Marks	CO	RBT

1 (a) What is CAPM? — [03] CO2 L1

(b) Differentiate between SML and CML — [07] CO2 L2

(c) Sun Rise company manages two mutual funds. The funds are Index fund and equity fund. The data below provide the key statistical information. — [10] CO2 L3

Growth fund	Return	Beta	σ	r
X	15	1.15	16	0.68
Y	13	1.25	18	0.83
Z	14	1.0	12	1.00
Rf	5%			
Rm	11			

a) According to the Jensen method, Which fund performs well

b) In your, opinion, which fund consists more of systematic risk?

2 (a) What is Arbitrage Pricing theory? — [03] CO5 L1

(b) Texton Ltd is expected to buy a dividend of Rs 7 in the next year. The dividend in subsequent year is expected to grow at the rate of 10% per year. If the required rate of return is 15% per year, what would be its price? Is it advisable to buy the share if its market value is Rs 150 — [07] CO2 L3

(c) Mr Anand is having unit in mutual fund for the past 3 years. He wants to evaluate its performance by comparing it to the market. — [10] CO5 L3

Particulars	X	Y
Return	70.60	41.40
σ	41.31	19.44
Rf	12	
β	1.12	

Find out the sharpe and Treynor's indices, comment on it.

3 (a) What is mutual fund? — [03] CO5 L1

(b) From the following details using SML estimate whether the securities are — [07] CO5 L3

overpriced, underpriced, relative to the market.

Particulars	Expected return	β	σ
BSE Index (market)	0.12	1	20
Riskless Treasury bills	0.08	0	0
Scrip A	0.32	1.70	50
Scrip B	0.30	1.40	35
Scrip C	0.25	1.10	40

(c) The following results were obtained from a study for a period of 6 months in 2012.   [10]   CO5   L3

Particulars	Rp	σp	β
Balanced fund	25.38	4.0	0.23
Small and Mid cap fund	36.28	6.86	0.52
Infra fund	45.56	4.31	0.63
Nifty	36.74	3.69	1.00
Rf	9.00		

Using the inputs, Rank the fund according to the predictive ability of the fund's management.

Part B - Compulsory (1*10=10 marks)

4. a) Consider the multifactor model APT with two factors. Portfolio A has a beta of 0.75 on factor 1 and a beta of 1.25 on factor 2. The risk premium on the factor 1 and factor 2 portfolios are 1% and 7% respectively. The risk free rate of return is 7%. Calculate the expected return on portfolio A if no arbitrage exists   [05]   C05   L3

b) Broadway Investment Co. manages equity fund consisting of 5 stocks with the following market values and calculate its portfolio beta and expected return using CAPM   [05]   CO5   L3

Stock	Market Value(Rs)	Beta
A	300,000	1.3
B	250,000	1.2
C	200,000	0.9
D	150,000	0.5
E	100,000	1.6

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Internal Assessment Test – 3

Code: 18MBAFM302

Sub:	Investment Management					Branch:	MBA
Date:	18-11-2019	Duration: 90 mins	Max Marks: 50	Sem: III			

		Marks	OBE	
			CO	RBT

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

1 (a) What is CAPM? — [03] CO2 L1

The Capital Asset Pricing Model (CAPM) describes the relationship between systematic risk and expected return for assets, particularly stocks. CAPM is widely used throughout finance for pricing risky securities and generating expected returns for assets given the risk of those assets and cost of capital.

(b) Differentiate between SML and CML — [07] CO2 L2

CML stands for Capital Market Line, and SML stands for Security Market Line.

The CML is a line that is used to show the rates of return, which depends on risk-free rates of return and levels of risk for a specific portfolio. SML, which is also called a Characteristic Line, is a graphical representation of the market's risk and return at a given time.

One of the differences between CML and SML, is how the risk factors are measured. While standard deviation is the measure of risk for CML, Beta coefficient determines the risk factors of the SML.

The CML measures the risk through standard deviation, or through a total risk factor. On the other hand, the SML measures the risk through beta, which helps to find the security's risk contribution for the portfolio.

While the Capital Market Line graphs define efficient portfolios, the Security Market Line graphs define both efficient and non-efficient portfolios.

(c) Vardhaman Ltd Co. earnings and dividends have been growing at a rate of 18% p.a. This growth rate is expected to continue for 4 years. After that the growth rate will fall to 12 % for the next 4 years. Thereafter the growth rate is expected to be 6% forever. If last dividend per share was Rs 2 and the investor's required rate of return on Vardhaman's Co. equity is 15%. What is the intrinsic value per share — [10] CO2 L3

2 (a) What is Arbitrage Pricing theory? — [03] CO5 L1
Arbitrage pricing theory (APT) is a multi-factor asset pricing model based on the idea that an asset's returns can be predicted using the linear relationship between the asset's expected return and a number of macroeconomic variables that capture systematic risk. It is a useful tool for analyzing portfolios from a value investing perspective, in order to identify securities that may be temporarily mispriced.

(b) Texton Ltd is expected to buy a dividend of Rs 7 in the next year. The dividend in subsequent year is expected to grow at the rate of 10% per year. If the required rate of return is 15% per year, what would be its price? Is it advisable to buy the share if its market value is Rs 150 **[07] CO2 L3**

(c) Mr Anand is having unit in mutual fund for the past 3 years. He wants to evaluate its performance by comparing it to the market. **[10] CO5 L3**

Particulars	X	Y
Return	70.60	41.40
σ	41.31	19.44
Rf	12	
β	1.12	

Find out the sharpe and Treynor's indices, comment on it.

3 (a) **What is mutual fund?** **[03] CO5 L1**
A mutual fund is a professionally managed investment fund that pools money from many investors to purchase securities. These investors may be retail or institutional in nature. Mutual funds have advantages and disadvantages compared to direct investing in individual securities

(b) From the following details using SML estimate whether the securities are overpriced, underpriced, relative to the market. **[07] CO5 L3**

Particulars	Expected return	β	σ
BSE Index (market)	0.12	1	20
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(c) The following results were obtained from a study for a period of 6 months in 2012. **[10] CO5 L3**

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Using the inputs, Rank the fund according to the predictive ability of the fund's management.

4. a) Consider the multifactor model APT with two factors. Portfolio A has a beta of 0.75 on factor 1 and a beta of 1.25 on factor 2. The risk premium on the factor 1 and factor 2 portfolios are 1% and 7% respectively. The risk free rate of return is 7%. Calculate the expected return on portfolio A if no arbitrage exists

[05] C05 L3

   b) Broadway Investment Co. manages equity fund consisting of 5 stocks with the following market values and calculate its portfolio beta and expected return using CAPM

[05] CO5 L3

Stock	Market Value(Rs)	Beta
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D	150,000	0.5
E	100,000	1.6

Course Outcomes		PO1	PO2	PO3	PO4	PO5
CO1:	To understand the process of investments					
CO2:	To understand the insight of risk and return relationship, and valuation of securities	1c, 2b,		-	-	-
CO3:	To familarise the fundamental and technical analysis			-	-	-
CO4:	To get an insight the understanding of stock market functioning in India and abroad			-	-	-
CO5:	To learn the theories of portfolio management and also the tools and	1a, 2a	3b, 4a,	-	-	⊜

Solution to 1C

$$Rp - Rf = \alpha_p + \beta (Rm - Rf).$$

$$\stackrel{x}{=}. \quad 15 - 5 = \alpha_p + 1.15 (11 - 5).$$

$$10 = \alpha_p + 1.15 (6).$$

$$10 = \alpha_p + 6.9$$

$$10 - \alpha_p - 6.9 = 0 \qquad\qquad Ji = \frac{\alpha}{\beta}$$

$$3.1 - \alpha_p = 0$$

$$\boxed{\alpha_p = 3.1} \qquad\qquad Ji = \frac{3.1}{1.15}$$

$$\boxed{Ji = 2.69}$$

$$y. \qquad Rp - Rf = = \alpha_p + \beta (Rm - Rf).$$

$$13 - 5 = \alpha_p + 1.25 (11 - 5).$$

$$8 = \alpha_p + 1.25 (6)$$

$$8 = \alpha_p + 7.5$$

$$8 - \alpha_p - 7.5 = 0 \qquad\qquad Ji = \frac{\alpha}{\beta}$$

$$0.5 - \alpha_p = 0$$

$$\boxed{\alpha_p = 0.5} \qquad\qquad \frac{0.5}{1.25}$$

$$\boxed{Ji = 0.4}$$

2

$$Rp - Rf = \alpha p + \beta (Rm - Rf)$$

$$14 - 5 = \alpha p + 1.0 (11 - 5)$$

$$9 = \alpha p + 1 (6)$$

$$9 = \alpha p + 6$$

$$\boxed{\alpha p = 3}$$

$$Ji = \frac{\alpha}{\beta} = \frac{1.0}{1}$$

$$\boxed{Ji = 1}$$

Out of 3 securities security α perform well

y is more systematic Risk based on Beta

Solution 2b

$$D_1 = 7 \qquad Cmp \ 150.$$
$$g = 10\%$$
$$r = 15\%$$

$$Po = \frac{D_1}{r - g} = \frac{7}{0.15 - 0.010} = \frac{7}{0.05}$$

$$Po = \text{m } 140$$
$$Cmp: \text{m } \underline{150/}$$

It is overpriced
Hence not to Buy

Solutions to 2c

2C $Si = \dfrac{Rp - RF}{\sigma p}$

$x = \dfrac{70.60 - 12}{41.31}$

$Y = \dfrac{41.40 - 12}{19.44}$

$\dfrac{58.6}{41.31}$

$x = Sp = 1.42$

$\boxed{Y = Sp = 1.51}$

Y performs better

treynor $tp = \dfrac{Rp - Rf}{\beta p}$

$x = \dfrac{70.60 - 12}{1.12}$

$Y = \dfrac{41.40 - 12}{1.12}$

$tp = 52.32$

$\boxed{tp = 26.25}$

X performs better.

3C

Balanced fund

$$R_p - R_f = \alpha_p + \beta(R_m - R_f),$$

$$25.38 - 9 = \alpha_p + 0.23(36.74 - 9)$$

$$16.38 = \alpha_p + 0.23(27.74)$$

$$16.38 = \alpha_p + 6.3802$$

$$\alpha_p = 10$$

$$Ji = \frac{\alpha_p}{\beta} = \frac{10}{0.23} = 43.38 \quad - \text{I}$$

Small and mid cap fund

$$R_p - R_f = \alpha_p + \beta(R_m - R_f)$$

$$36.28 - 9 = \alpha_p + 0.52(36.74 - 9),$$

$$27.28 = \alpha_p + 0.52(27.74)$$

$$27.28 = \alpha_p + 14.42$$

$$\boxed{\alpha_p = 12.86}$$

$$Ji = \frac{\alpha_p}{\beta} = \frac{12.86}{0.52} = \boxed{Ji = 24.73} \quad -\text{III}$$

Infra fund

$$R_p - R_f = \alpha_p + \beta(R_m - R_f)$$

$$45.56 - 9 = \alpha_p + 0.63(36.74 - 9)$$

$$36.56 = \alpha_p + 0.63(27.74)$$

$$36.56 = \alpha_p + 17.48$$

$$\boxed{\alpha_p = 19.08} \qquad Ji = \frac{19.08}{0.63} = 30.28 \quad -\text{II}$$

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Portfolio A $\beta = 0.75$. factor 1

$\beta = 1.25$ factor 2.

Risk premium = 1% 7%.

Rf = 7%.

$R_i = \lambda_0 + \lambda_1 \beta_{i1}$

$R_i = 7 + 1(0.75)$

$R_i = 7 + 0.75$

$$R_i = 7.75\%.$$

$R_i = \lambda_0 + \lambda_1 \beta_{i2}$

$R_i = 7 + 7(1.25)$

$7 + 8.75$

$$R_i = 15.75\%.$$

4(b). $\beta_p = w_i \times \beta_i$

weightage calculation

Stock	Market value (Rs)	weight		$\sum w_i \beta_i$
		300,000/10,00,000	0.3 × 1.3	0.39
A	300,000			
B	250,000	0.25 × 1.2	=	0.30
C	200,000	0.20 × 0.9	=	0.18
D	150,000	0.15 × 0.5	=	0.075
E	100,000	0.10 × 1.6	=	0.16
	10,00,000			1.105

$$\beta_p = 1.105$$