CMR INSTITUTE OF TECHNOLOGY

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Internal Assesment Test - II

Sub:	Investment Management							Code:	18MBAFM302
Date:	14/10/19	Duration:	90 mins	Max Marks:	50	Sem:	III	Branch:	MBA

		Marks	OBE CO	OBE RBT
	Part A - Answer Any Two Full Questions (2* 20 = 40 marks)			
1 (a)	Define Bond Duration Duration is a measure of the sensitivity of the price of a bond or other debt instrument to a change in interest rates. A bond's duration is easily confused with its term or time to maturity because they are both measured in years. However, a bond's term is a linear measure of the years until repayment of principal is due; it does not change with the interest rate environment. Duration, on the other hand is non-linear and accelerates as time to maturity lessens.	[03]	CO1	L1
(b)	Calculate the value of the bond with semi- annual interest from the following data: A bond has a par value of Rs 1000 It bears a coupon rate of 10% The bond maturity period is after 8 years The required rate of return on the bond is 12% Payment of interest is semi- annually.	[07]	CO2	L3
(c)	Anand owns Rs 1000 face value of bond with 5 years to maturity. The Bond has an annual coupon of Rs 75. The bond is currently priced at Rs 970. Given an approximate discount rate of 10%. Should Anand hold or sell the bond?	[10]	CO1	L5
2 (a)	The Beta of the stock is -1.8. What does this mean? A **negative beta** correlation **means** an investment moves in the opposite direction from the stock market. **When** the market rises, a **negative-beta** investment generally falls.	[03]	CO2	L2
(b)	Explain the concept of market value and intrinsic value of the bond The intrinsic value of a business (or any investment security) is the present value of all expected future cash flows. ... Another way to define intrinsic value is simply, "The price a rational investor is willing to pay for an investment, given its level of risk." Market value refers to the current or most recently-quoted price for a market-traded security. It can also refer to the most probable price an asset, like a house, would fetch on the open market	[07]	CO1	L2

(c)	The annual rates of return for the Jarvis Corporation and the market return (index) are given below:	[10]	CO1	L4

Year	Return of Jarvis	Return on market (Index)
1991	-5%	-6%
1992	14%	16%
1993	10%	12%
1994	12%	14%
1995	17%	20%

Calculate beta coefficient and Alpha and analyse it.

3 (a)	What is Callability risk?	[03]	CO2	L1

A callable bond is a debt instrument in which the issuer reserves the right to return the investor's principal and stop interest payments before the bond's maturity date. Corporations may issue bonds to fund expansion or to pay off other loans. If they expect market interest rates to fall, they may issue the bond as callable, allowing them to make an early redemption and secure other financings at a lowered rate. The bond's offering will specify the terms of when the company may recall the note.

(b)	Alpha of a stock is 3.72, Beta is 0.99 and market return is 13.5%. What is the expected return of the stock?	[7]	CO2	L3
(c)	A Company issues bond at 10% coupon rate, and with a face value of Rs 1000 maturity period is 10 years. Required rate of return is 10%. Determine the value of the bond when the time period is i) 5 yearsii) 15 years.	[10]		

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

4 (a)	Calculate current yield, yield to call, and yield to maturity from the following data: The face value of the bond is Rs 100 Interest on bond is 14% It matures at par in 15 years It is redeemable (callable) in 5 years The call price of the debenture is 5 years is Rs 114. It currently sells at Rs 105.	[10]	CO1	L3

Solution to Problems in the Question paper.

1b.

Calculation of P_0 of the bond if the interest is paid Semi-annually

Par value = Tk 1000/- $I = 10\%$ $n = 8$ yrs $r = 12\%$

Semi annually	$n \times 2$	$\frac{r}{2}$	$\frac{c}{2}$
	8×2	$\frac{12\%}{2}$	$\frac{10\%}{2}$
	$= 16$ yr	$= 6\%$	$= 5\%$

$$P_0 = C \times PVIFA_{(r,n)} + m \times PVIF_{(r,n)}$$

$$C = \frac{5}{100} \times 1000 = 50$$

$$P_0 = 50 \times PVIFA_{(6\%\ yr\ 16yr)} + 1000 \times PVIF_{(6\%\ 16\ yrs)}$$

$$P_0 = (50 \times 10.106) + (1000 \times 0.394)$$

$$P_0 = \underline{\text{Tk } 899.3/-}$$

1C.

Par value : Rs 1000/-

n = 5yrs.

C = 75/- cmp = Rs 970 r = 10 %.

$P_0 = C \times PVIFA_{(r,n)} + M \times PVIF_{(r,n)}$

$75 \times PVIFA_{(10\%\ 5yrs)} + 1000 \times PVIF_{(10\%\ 5yrs)}$

$P_0 = [75 \times 3.791] + [1000 \times 0.621]$

$P_0 =$ Rs 905.325.

Inference : This bond should not be purchased because the cmp (970) Rs is more than the actual value (intrinsic value) of the bond Rs 905.325.

2C

Year	Stock return Y (%)	Index return X (%)	XY	X^2
1991	−5	−6	30	36
1992	14	16	224	256
1993	10	12	120	144
1994	12	14	168	196
1995	17	10	170.	100
	$\Sigma Y = 48$	$\Sigma X = 46$	$\Sigma XY = 712$	$\Sigma X^2 = 732$

$$\beta = \frac{N\Sigma xy - (\Sigma x)(\Sigma y)}{N\Sigma x^2 - (\Sigma x)^2}$$

$$\beta_2 \quad \frac{5(712) - (46)(48)}{5(732) - (46)^2}$$

$\beta = 0.8756$

$\alpha = \bar{y} - \beta(\bar{x})$

$\bar{y} = \frac{\Sigma y}{N} = \frac{48}{5} = 9.6$

$\bar{x} = \frac{\Sigma x}{N} = \frac{46}{5} = 9.2.$

$\alpha = 9.6 - 0.8756(9.2)$

$\alpha = 1.544.$

Inference. Since β is positive and less than 1 hence it is considered the security is less risky and α is positive. it is a good sign for investment.

3b) CRL or $E(R) = \alpha + \beta\bar{x}$

or $\alpha + \beta \cdot R_m$

$\bar{R} = 3.72 + 0.99(13.5)$

$\bar{R} = 17.085\%$

30).

Calculate P_0 of the bond if $n = 10$ yrs

Face value = ₹ 1000 $n = 10$ $r = 10\%$

$I = 10\%$ $C = \frac{10}{100} \times 1000 =$ **$C = ₹ 100$**

$$P_0 = C \times PVIFA_{(r,n)} + M \times PVIF_{(r,n)}$$

$$P_0 = 100 \times PVIFA_{(10\%, 10yrs)} + 1000 \times PVIF_{(10\%, 10yrs)}$$

$$P_0 = (100 \times 6.1446) + (1000 \times 0.3855)$$

$P_0 =$ ₹ 999.96

If $n = 5$ yrs then $P_0 =$

$$P_0 = 100 \times PVIFA_{(10\%, 5yrs)} + 1000 \times PVIF_{(10\%, 5yrs)}$$

$$(100 \times 3.7908) + (1000 \times 0.8209)$$

$P_0 =$ ₹ 1199.98/-

If $n = 15$ yrs then $P_0 =$

$$P_0 = 100 \times PVIFA_{(10\%, 15yrs)} + (1000 \times PVIF_{10\%, 15yrs})$$

$$(100 \times 7.6061) + (1000 \times 0.2394)$$

$P_0 =$ ₹ 1000.01

Part B

4a) Calculate Current Yield.

Par value = Rs 100/- n = 15yr. callable n = 5yr.

Call price = 114/-

CMP = Rs 105

C = 14%. $\frac{14}{100} \times 100 =$ **C = Rs 16.14**

$$CY = \frac{C}{CMP} \times 100 = \frac{14}{114} \times 100$$

CY = 13.33 %.

b) Calculation of YTM.

Assuming: r = 16 %.

YTM = ~~C x PI~~

$$P_0 = C \times PVIFA_{(r,n)} + M \times PVIF_{(r,n)}$$

If r = 16 %: $14 \times PVIFA_{(16\%,5yr)} + 100 \times PVIF_{(16\%,5yr)}$

$P_0 = (14 \times 5.575) + (100 \times 0.108)$

P_0 = Rs 78.05

Try @ 12 %

$$P_0 = \left[14 \times PVIFA_{(12\%,\ 15yr)}\right] + \left[100 \times PVIF_{12\%\ 5yr}\right]$$

$$\left[14 \times 6.811\right] + \left[100 \times 0.183\right]$$

$P_0 = 113.65$/-

Interpolation method

$$LR\ \% + \left[\frac{NPV\ @LR - NPV\ @HR}{NPV\ @LR - Cmp} \times \text{Difference in } \%\right]$$

$$12\% + \left[\frac{114 - 89}{114 - 105} \times 4\right]$$

r or YTM = ~~23.44~~ %

$YTM = 10.15\ \%$

4(c) calculating YTC.

$$P_0 = C \times PVIFA_{(r,n)} + M \times PVIF_{(r,n)}$$

Assuming $r = 16\%$

$$P_0 = (14 \times 3.2743) + (100 \times 0.4761)$$

$P_0 = 93.45 \neq$ Cmp 114.

Anume $r = 10\%$.

$$P_0 = (14 \times 3.7908) + (100 \times 0.8209)$$

$$P_0 = 53.0712 + 82.09$$

$$P_0 = ₹\ 135.16$$

Using interpolation method

$$r = LR\% + \left[\frac{NPV\ @\ LR - NPV\ @\ HR}{NPV\ @\ LR - CMP} \times \text{Diff in } \%\right]$$

$$10\% + \left[\frac{135.16 - 93.45}{135.16 - 114} \times 0.06\right]$$

$$YTC = 10.118\%$$