INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR
End-Spring Semester 2017-18

Date of Examination: 23-04-2018, Session (AN) 2:00-5:00 PM

Duration 3 hrs.; Full Marks 70
Subject No.: BM40002 Subject: Introduction to Financial Management
Department/Center/School: Vinod Gupta School of Management
Specific charts, graph paper, log book etc., required:
Special Instructions (if any): *Wherever necessary, state your assumptions, without waiting for clarification.* ***Do not panic.***

Question # 1

You are considering investing in a security that matures in 10 years with a par value of Rs.1,000. During the first five years, the security has an 8 percent coupon with quarterly payments. During the remaining five years the security has a 10 percent coupon with quarterly payments. After 10 years, you receive the par value.

Another 10-year bond has an 8 percent semiannual coupon. This bond is selling at its par value, Rs.1,000. This bond has the same risk as the security you are thinking of purchasing. Given this information, what should be the price of the security you are considering purchasing?

[5 Marks]

OR

Bond X and Bond Y have 9 percent coupons, make semiannual payments, and a are priced at par value, bond X has 3 years to maturity, whereas Bond Y has 20 years to maturity. If interest rates suddenly rise by 2 percent, what is the percentage change in the price of Bond X and Bond Y? If rates were to suddenly fall by 2 percent instead, what would the percentage change in the price of Bond X and Bond Y be then? Illustrate your answers by graphing bond price versus YTM. What does this problem tell you about the internet rate risk of longer-term bonds?

[5 Marks]

Question # 2

A financial analyst has been following Fast Start Inc., a new high-growth company. She estimates that the current risk-free rate is 6.25 percent, the market risk premium is 5 percent, and that Fast Start's beta is 1.75. The current earnings per share (EPS_0) are Rs.2.50. The company has a 40 percent payout ratio. The analyst estimates that the company's dividend will grow at a rate of 25 percent this year, 20 percent next year, and 15 percent the following year. After three years the dividend is expected to grow at a constant rate of 7 percent a year. The company is expected to maintain its current payout ratio. The analyst believes that the stock is fairly priced. What is the current stock price?

[4 Marks]

Question # 3

Two shares P and Q, have the following expected returns (ER), standard deviation (σ) and correlation:

	P	Q
ER	16%	14%
σ	20%	16%
Correlation (P, Q)	0	
β	1.3	0.7

Required:

a) Determine the minimum risk combination for a portfolio of P and Q.

b) If the correlation of returns of P and Q is -1.0, then what is the minimum risk portfolio of P and Q?

c) If an investor wants to invest 40% in Stock P and rest in Stock Q and the correlation between returns of Stocks P and Q is expected to be 0.8, find out the portfolio risk.

d) If another investor would like to invest 20%, 30%, 40% and 10% respectively in Stock P, Stock Q, a mutual fund that replicates the market portfolio and risk free security respectively, estimate the portfolio β.

[3+2+2+2 = 9 Marks]

Question # 4

Swagato and Company is considering setting up a machine for producing a chemical. It projects unit sales for the chemical as follows:

Year	1	2	3	4	5
Units	90,000	110,000	130,000	140,000	100,000

Production of the chemicals will require Rs.5,00,000 in net working capital to start and additional net working capital investments each year equal to 10% of the projected sales increase for the following year. The fixed costs are Rs.4,00,000 per year, variable productions costs are Rs.30 per unit, and the units are priced at Rs.20 each. The machine will cost Rs.8,00,000 with an expected salvage value of Rs.50,000 at the end of the 5th year. The company follows straight line method of depreciation. It is subject to 30% income tax.

The company's 10% Debentures are traded at Rs.1,050 (Rs.1,000 face value), which will mature after 5 years. Interest is paid semi-annually. Its equity shares are traded at Rs.50. Its beta is 1.20. The market rate of return and risk free rate of return are 15% and 7% respectively. The number of debentures and equity shares of the company are 50,000 and 2,00,000 respectively.

a) Find the weighted average cost of capital of Swagato and Company. Use market value weights.

b) Estimate the cash flows of the project as above and using NPV, suggest if the project can be taken up or not.

[6 + 12 = 18 Marks]

Question # 5

Projected Profit and Loss A/c of ABC Limited is as below:

Particulars	Rs.	Particulars	Rs.
1. Sales	30,00,000	* COGS:	
2. Cost of goods sold*	20,00,000	Materials used	10,00,000
3. Gross profit	10,00,000	Wages and other mfg. expenses	8,00,000
4. Administrative expenses	2,00,000	Depreciation	4,00,000
5. Selling expenses	1,50,000	Closing stock	2,00,000
6. PBT	6,50,000	COGS	20,00,000
7. Tax provision	1,50,000		
8. Net profit	5,00,000		

The figures given relate only to the goods that have been finished, and not to work in progress; goods equal to 12 per cent of the year's production (in terms of physical units) are in progress on an average requiring full material, but only 50 per cent of other expenses. The firm has a policy of keeping two months' consumption of material in stock. All expenses are paid one month in arrear. Suppliers of material grant one and a half months' credit; sales are 20 per cent cash while remaining are sold on two months' credit. ABC Limited must maintain minimum cash of Rs.1,20,000.

Estimate the net working capital on **cash cost basis.**

[12 Marks]

Question # 6

RAM Co. and SHYAM Co. are identical firms in all respects except for their capital structure. RAM is all equity financed with Rs.900,000 in stock. SHYAM uses both stock and perpetual debt; its stock is worth Rs.450,000 and the interest rate on its debt is 8 percent. Both firms expect EBIT to be Rs.120,000. Ignore taxes.

a. Gopal owns Rs.45,000 worth of SHYAM's stock. What rate of return is he expecting?
b. Show how Gopal could generate exactly the same cash flows and rate of return by investing in RAM and using homemade leverage.
c. What is the cost of equity for RAM? What is it for SHYAM?
d. What is the WACC for RAM? For SHYAM? What principle does one notice?

[2 x 4 = 8 Marks]

OR

You own 800 shares of stock in Sinha & Co. You will receive Rs.2.50 per share dividend in one year. In two years, Sinha & Co. will pay a liquidating dividend of Rs.60 per share. The required return on Sinha & Co. stock is 16 percent. What is the current share price of your stock (ignoring taxes)? If you would rather have equal dividends in each of the next two years, show how you can accomplish this by creating homemade dividends. Suppose you want only Rs.600 in dividends the first year. What will your homemade dividend be in two years?

[2+3+3 = 8 Marks]

Question # 7

Galaxy limited needs Rs.20,00,000 for a new project. The sales price and variable cost per unit for the product is expected to be Rs.100 and Rs.40. The annual fixed cost (operating) is expected to be Rs.2,00,000. The company is subject to 30% tax rate. The project is going to be financed by either of the following plans:

i. 10% Debt and Equity in 40:60 ratio.
ii. 12% Debt and Equity in 50:50 ratio

The equity shares can be issued at Rs.30 each. The expected sales for the first year is 12,000 units.

Required:

a) Which plan would you suggest?
b) Find the indifferent EBIT between two plans.

[4 + 3 = 7 Marks]

Question # 8

a) Explain – Dividend is sticky in nature.
b) There is an optimal capital structure because of associated costs involved. Explain

[3 + 4 = 7 Marks]

End of the Question Paper

Wishing you very best in all your future endeavours……