INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

End-Autumn Semester Examination 2022-23

Date of Examination: 18/11/2022 **Session:** AN **Duration:** 3 hrs. **Full Marks:** 50

Subject No.: HS60009 **Subject:** FINANCIAL MANAGEMENT

Department/Center/School: Humanities and Social Sciences

Specific charts, graph paper, log book etc., required: None

Special Instructions (if any): (i) Answer all the questions. (ii) Use of non-programmable calculator is permitted. Use of financial calculator is strictly prohibited. (iii) While answering all the necessary steps/calculations should be clearly shown. (iv) Interest factor tables can be used. (iv) This question paper contains 11 questions.

1. Williamson, Inc., has a debt–equity ratio of 2.5. The firm's weighted average cost of capital is 10 percent, and its pretax cost of debt is 6 percent. Williamson is subject to a corporate tax rate of 35 percent. (i) What is Williamson's cost of equity capital? (ii) What is Williamson's unlevered cost of equity capital? [3]

2. Janicek Corp. is experiencing rapid growth. Dividends are expected to grow at 30 percent per year during the next three years, 18 percent over the following year, and then 8 percent per year indefinitely. The required return on this stock is 11 percent, and the stock currently sells for $65 per share. What is the projected dividend for the coming year? [3]

3. The Morgan Corporation has two different bonds currently outstanding. Bond M has a face value of $30,000 and matures in 20 years. The bond makes no payments for the first six years, then pays $800 every six months over the subsequent eight years, and finally pays $1,000 every six months over the last six years. Bond N also has a face value of $30,000 and a maturity of 20 years; it makes no coupon payments over the life of the bond. If the required return on both these bonds is 8 percent compounded semiannually, what is the current price of Bond M? of Bond N? [3]

4. Bruce & Co. expects its EBIT to be $185,000 every year forever. The firm can borrow at 9 percent. Bruce currently has no debt, and its cost of equity is 16 percent. (i) If the tax rate is 35 percent, what is the value of the firm? (ii) What will the value be if Bruce borrows $135,000 and uses the proceeds to repurchase shares? (iii) What is the cost of equity after recapitalization and What is the WACC? (iv) What are the implications for the firm's capital structure decision? [Hint: MM and Taxes] [4]

5. You are the financial analyst for a tennis racket manufacturer. The company is considering using a graphite like material in its tennis rackets. The company has estimated the information in the following table about the market for a racket with the new material. The company expects to sell the racket for six years. The equipment required for the project has no salvage value. The required return for projects of this type is 13 percent, and the company has a 40 percent tax rate. Should you recommend the project? Why? Why not? [5]

	Pessimistic	Expected	Optimistic
Market size	105,000	120,000	145,000
Market share	20%	23%	25%
Selling price	$150	$155	$161
Variable costs per unit	$104	$99	$98
Fixed costs per year	$965,000	$920,000	$890,000
Initial investment	$1,900,000	$1,800,000	$1,700,000

6. You are evaluating a project that costs $644,000, has an eight-year life, and has no salvage value. Assume that depreciation is straight-line to zero over the life of the project. Sales are projected at 70,000 units per year. Price per unit is $37, variable cost per unit is $21, and fixed costs are $725,000 per year. The tax rate is 35 percent, and you require a 15 percent return on this project. (i) What is the sensitivity of NPV to changes in the sales figure? Explain what your answer tells you about a 500-unit decrease in projected sales. (ii) What is the sensitivity of OCF to changes in the variable cost figure? Explain what your answer tells you about a $1 decrease in estimated variable costs. (iii) suppose the projections given for price, quantity, variable costs, and fixed costs are all accurate to within ±10% percent. Calculate the best-case and worst-case NPV figures. [5]

7. You are considering a new product launch. The project will cost $820,000, have a four-year life, and have no salvage value; depreciation is straight-line to zero. Sales are projected at 450 units per year; price per unit will be $18,000; variable cost per unit will be $15,400; and fixed costs will be $610,000 per year. The required return on the project is 15 percent, and the relevant tax rate is 35 percent. (i) Based on your experience, you think the unit sales, variable cost, and fixed cost projections given here are probably accurate to within ±10% percent. (ii) What are the upper and lower bounds for these projections? What is the base-case NPV? What are the best-case and worst-case scenarios? (iii) Evaluate the sensitivity of your base-case NPV if fixed cost changes to $620,000. [5]

8. Elucidate Modigliani and Miller (M&M) Proposition I and II without and with taxes. How does the existence of bankruptcy costs and agency costs affect MM theory in a world where corporations pay taxes? [5]

9. The Saunders Investment Bank has the following financing outstanding. What is the WACC for the company? [5]

Debt	60,000 bonds with a coupon rate of 6 percent and a current price quote of 109.5; the bonds have 20 years to maturity. 230,000 zero coupon bonds with a price quote of 17.5 and 30 years until maturity
Preferred stock	150,000 shares of 4 percent preferred stock with a current price of $79, and a par value of $100
Common stock	2,600,000 shares of common stock; the current price is $65, and the beta of the stock is 1.15
Market	The corporate tax rate is 40 percent, the market risk premium is 7 percent, and the risk-free rate is 4 percent

11.06%

10. "There is considerable debate on how dividend policy affects firm value. Some believe that dividends increase shareholder wealth . . . , others believe that dividends are irrelevant . . . , and still others believe that dividends decrease shareholder wealth". Elucidate the dividend models that argue in support of the dividend policy increasing shareholder wealth and models that argue in support of the irrelevance of dividend policy? Also, explain the arguments in support of the dividend policy decreasing shareholder wealth? [5]

11. Modern Appliances Corporation has reported its financial results for the year ended December 31, 2011

Modern Appliances Corporation Income Statement for the Fiscal Year Ended December 31, 2011

Net sales	$5,398,412,000
Cost of goods sold	3,432,925,255
Gross profit	$1,965,486,745
Selling, general, and administrative expenses	1,036,311,231
Depreciation	299,928,155
Operating income	$629,247,359
Interest expense	35,826,000
EBT	$593,421,359
Income taxes	163,104,554
Net earnings	$ 430,316,805

Modern Appliances Corporation Balance Sheet as of December 31, 2011

Assets		Liabilities and Equity	
Cash and cash equivalents	$ 514,412,159	Short-term borrowings	$ 117,109,865
Accounts receivables	1,046,612,233	Trade accounts payable	466,937,985
Inventories	981,870,990	Other current liabilities	994,289,383
Other current assets	313,621,610	**Total current liabilities**	**$1,578,337,233**
Total current assets	**$2,856,516,992**	Long-term debt	1,200,691,565
Net fixed assets	754,660,275	Common stock	397,407,352
Goodwill	118,407,710	Retained earnings	1,218,207,588
Other assets	665,058,761	---	---
Total Assets	**$4,394,643,738**	**Total liabilities and equity**	**$4,394,643,738**

Using the information from the financial statements, complete a comprehensive ratio analysis for Modern Appliances Corporation. Also, use the DuPont identity, and after calculating the component ratios, compute the ROE for this firm. [7]

========X========X========X========X========X========X========