

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)

DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Semester Final Examination

Summer Semester, A. Y. 2022-2023

Course No. : BTM 4601

Time : 3 hours

Course Title : Financial Management II

Full Marks : 150

Answer **all 6 (six)** questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

1. Rieger International is attempting to evaluate the feasibility of investing \$95,000 in a piece of equipment that has a 5-year life. The firm has estimated the cash inflows associated with the proposal as shown in the following table. The firm has a 12% cost of capital. 25 (CO1)
(PO1)

Year	Cash Inflows
1	\$20000
2	\$25000
3	\$30000
4	\$35000
5	\$40000

- i. Calculate the net present value (NPV) for the proposed investment.
 - ii. Calculate the internal rate of return (IRR), rounded to the nearest whole percent, for the proposed investment.
 - iii. Evaluate the acceptability of the proposed investment using NPV and IRR. What recommendation would you make relative to implementation of the project? Why?
2. a) Bryson Sciences is planning to purchase a high-powered microscopy machine for \$55,000 and incur an additional \$7,500 in installation expenses. It is replacing similar microscopy equipment that can be sold to net \$35,000, resulting in taxes from a gain on the sale of \$11,250. Because of this transaction, current assets will increase by \$6,000 and current liabilities will increase by \$4,000. Calculate the initial investment in the high-powered microscopy machine. 5.0 (CO1)
(PO1)
- b) Strong Tool Company has been considering purchasing a new lathe to replace a fully depreciated lathe that will last 5 more years. The new lathe is expected to have a 5-year life and depreciation charges of \$2,000 in year 1; \$3,200 in year 2; \$1,900 in year 3; \$1,200 in both year 4 and year 5; and \$500 in year 6. The firm estimates the revenues and expenses (excluding depreciation and interest) for the new and the old lathes. The firm is subject to a 40% tax rate. 20 (CO1)
(PO1)

Year	New Lathe		Old Lathe	
	Revenue	Expenses (excluding depreciation and interest)	Revenue	Expenses (excluding depreciation and interest)
1	\$40000	\$30000	\$35000	\$25000
2	\$41000	\$30000	\$35000	\$25000
3	\$42000	\$30000	\$35000	\$25000
4	\$43000	\$30000	\$35000	\$25000
5	\$44000	\$30000	\$35000	\$25000

- Calculate the operating cash inflows associated with each lathe.
- Calculate the incremental (relevant) operating cash inflows resulting from the proposed lathe replacement.

3. a) Outcast, Inc., has hired you to advise the firm on a capital budgeting issue involving two unequal-lived, mutually exclusive projects, M and N. The cash flows for each project are presented in the following table. Calculate the NPV and the annualized net present value (ANPV) for each project using the firm's cost of capital of 8%. Which project would you recommend? 12.5 (CO2) (PO1)

	Project M	Project N
Initial Investment	\$35000	\$55000
Year	Cash inflows	
1	\$12000	\$18000
2	\$25000	\$15000
3	\$30000	\$25000
4		\$10000
5		\$8000
6		\$5000
7		\$5000

- b) Centennial Catering, Inc., is considering two mutually exclusive investments. The company wishes to use a CAPM-type risk adjusted discount rate (RADR) in its analysis. Centennial's managers believe that the appropriate market rate of return is 12%, and they observe that the current risk-free rate of return is 7%. Cash flows associated with the two projects are shown in the following table. 12.5 (CO2) (PO1)

	Project X	Project Y
Initial Investment	\$70000	\$78000
Year	Cash inflows	
1	\$30000	\$22000
2	\$30000	\$32000
3	\$30000	\$38000
4	\$30000	\$46000

- Use a risk-adjusted discount rate approach to calculate the net present value of each project, given that project X has an RADR factor of 1.20 and project Y has an RADR factor of 1.40. The RADR factors are similar to project betas.
- Discuss your findings in part i, and recommend the preferred project.

4.	a)	Firm R has sales of 100,000 units at \$2.00 per unit, variable operating costs of \$1.70 per unit, and fixed operating costs of \$6,000. Interest is \$10,000 per year. Firm W has sales of 100,000 units at \$2.50 per unit, variable operating costs of \$1.00 per unit, and fixed operating costs of \$62,500. Interest is \$17,500 per year. Assume that both firms are in the 40% tax bracket.	15	(CO2) (PO1)
		<ul style="list-style-type: none"> i. Compute the degree of operating, financial, and total leverage for firm R. ii. Compute the degree of operating, financial, and total leverage for firm W. iii. Compare the relative risks of the two firms. 		
	b)	What are business risk and financial risk? How does each of them influence the firm's capital structure decisions?	5.0	(CO1) (PO1)
	c)	What are the main discussions of static theory of capital structure?	5.0	(CO1) (PO1)
5.	a)	Empire Electric Company (EEC) uses only debt and common equity. It can borrow unlimited amounts at an interest rate of $r_d = 9\%$ as long as it finances at its target capital structure, which calls for 35% debt and 65% common equity. Its last dividend (D_0) was \$2.20, its expected constant growth rate is 6%, and its common stock sells for \$26. EEC's tax rate is 40%. Two projects are available: Project A has a rate of return of 12% and Project B's return is 11%. These two projects are equally risky and about as risky as the firm's existing assets.	15	(CO2) (PO1)
		<ul style="list-style-type: none"> i. What is its cost of common equity? ii. What is the WACC? iii. Which projects should Empire accept? 		
	b)	The future earnings, dividends, and common stock price of Callahan Technologies Inc. are expected to grow 6% per year. Callahan's common stock currently sells for \$22.00 per share, its last dividend was \$2.00, and it will pay a \$2.12 dividend at the end of the current year.	10	(CO2) (PO1)
		<ul style="list-style-type: none"> i. Using the Dividend growth model, what is its cost of common equity? ii. If the firm's beta is 1.2, the risk-free rate is 6%, and the average return on the market is 13%, what will be the firm's cost of common equity using the CAPM approach? 		
6.	a)	What benefit is available to participants in a dividend reinvestment plan? How might the firm benefit from such a plan?	5.0	(CO1) (PO1)
	b)	What five factors do firms consider in establishing dividend policy? Briefly describe each of them.	7.5	(CO1) (PO1)
	c)	Contrast the basic arguments about dividend policy advanced by Miller and Modigliani and by Gordon and Lintner.	7.5	(CO1) (PO1)
	d)	Describe a constant-payout-ratio dividend policy, a regular dividend policy, and a low-regular-and-extra dividend policy. What are the effects of these policies?	5.0	(CO1) (PO1)