



TECHNICAL UNIVERSITY OF MOMBASA

School of business

DEPARTMENT OF ACCOUNTING AND FINANCE

MASTER OF BUSINESS ADMINISTRATION

BFI 5204: CORPORATE FINANCE

ORDINARY EXAMINATIONS

SERIES; AUGUST 2024

TIME; 3 HOURS

Instructions;

Answer question one and any other THREE questions

Do not write on this paper

Question One

(a) Stiphla Inc.'s real assets are expected to generate earnings before interest and taxes (EBIT) of sh.102,000 at the end of every year in perpetuity. The firm is currently financed by 50,000 shares each worth sh.6.11 and by sh.130,000 worth of perpetual debt issued at a rate of 12%. The corporate tax rate is 35%. Ignore personal taxes and bankruptcy costs.

- i. What is the current total firm value of Stiphla Inc.? **(3 marks)**
- ii. What is the current expected return on Stiphla's equity? **(4 marks)**
- iii. What is Stiphla's weighted average cost of capital (WACC)? **(4 marks)**
- iv. Show that the value of the firm can be obtained by discounting its after-tax earnings at the weighted average cost of capital. **(3 marks)**

(b) Janine Finch, the CFO of the company, has just found out that Stiphla could issue an additional sh.130,000 worth of perpetual debt to buy back some equity. However, because the new debt will be junior to the original debt, Stiphla will have to pay a rate of 14% on that new debt.

- (i) What is the value of the firm after it goes ahead with the new debt issue? **(5 marks)**

(ii) What is the new expected return on the firm's equity? **(5 marks)**

(iii) Explain why the shareholders are better off (in terms of their total wealth). **(3 marks)**

(iv) What is Stiphla's new weighted average cost of capital (WACC)? **(3 marks)**

c) Firms A and B are both unlevered. The shares of both companies are currently trading at sh.100, and both offer an annual pre-tax return of 10%. In the case of firm A, the return is entirely in the form of a dividend yield (i.e., the company pays a regular annual dividend of sh.10 a share). In the case of firm B, the return comes entirely as capital gain (the shares appreciate by 10% a year). Suppose that an investor buys a share of each firm today, and plans to sell them in 10 years. Suppose that dividends and capital gains are both taxed at 30%.

i) What is the annual after-tax yield (rate of return) on firm A's share over the 10-year period? **(5 points)**

ii) What is the annual after-tax yield (rate of return) on firm B's share over the 10-year period? **(5 points)**

Question Two

(a) Techthings Inc. is a firm that owns several technology stores in the Nairobi. They are considering opening a new store in Siaya to taking advantage of the proximity to a university campus. This project is financed with a zero-coupon bond with a market value today of 291.26M. The bond matures in one year. The project will generate a cash flow in two years of either 360M with prob. 0.6 or 280M with probability 0.4. The yield to maturity of the bond is 3% annual. Assume investors are risk neutral.

i) What is the face value of debt? **[2 marks]**

ii) What is the annual return demanded by investors? **[3 marks]**

iii) Explain why the yield to maturity is not the same as the cost of debt (R_d). **[3 marks]**

iv) Explain what are the advantages of financing this project with equity in opposition to debt (make sure to state your assumptions) **[4 marks]**

b) You are a financial analyst for a company that is considering a new project. If the project is accepted, it will use a fraction of a storage facility that the company already owns but currently does not use. The project is expected to last 10 years, and the annual discount rate is 10% (compounded annually). You research the possibilities, and find that the entire storage facility can be sold for sh.100,000 and a smaller (but big enough) facility can be acquired for sh.40,000. The book value of the existing facility is sh.60,000, and both

the existing and the new facilities (if it is acquired) would be depreciated straight line over 10 years (down to a zero book value). The corporate tax rate is 40%.

What is the opportunity cost of using the existing storage capacity? **(8 marks)**

Question Three

The Jack & Diane (JD) Corporation is considering a new 5-year project. Since this project is very different from JD's current operations, the adjusted present value will be used to value the project. The project requires an initial investment of sh. 750,000 in new assets, which will be depreciated straight-line to 0 over the project's 5-year life. These assets will be worthless in five years, i.e., they will not be resold. (Assume that the depreciation tax shields can be discounted at the project discount rate). Each year for five years, the project is expected to generate pre-tax revenues of sh.600,000 and to require pre-tax costs of sh.240,000. The entire project will be financed through a 5-year bank loan with an annual rate of 10%. The principal on the loan will be repaid in equal installments of sh.150,000 each (i.e., each year, the company pays sh.150,000 in principal, and pays the interest on the outstanding loan). It is estimated that the pre-tax costs (payable at time zero) of negotiating the loan will be 4% of the amount borrowed. The project's risk is very similar to the risk of Tommy & Gina (TG) Inc.'s assets. This firm is currently financed by 100,000 shares worth sh.12.50 each, and sh.750,000 worth of debt. The beta of TG's stock is 1.5, and the company borrows at a rate of 11%. The risk-free rate in the economy is 8%, and the expected return on the market is 18%. The current corporate tax rate is 45% (assume that it applies to both JD and TG). Ignore personal taxes.

a) What would be the appropriate discount rate for the project, if it were all-equity financed? . **(8 marks)**

b) What is the adjusted present value of the project? **(12 marks)**

Question Four

Ceder Co has details of two machines which could fulfil the company's future production plans. Only one of these machines will be purchased.

The 'standard' model costs sh. 50,000, and the 'de-luxe' sh.88,000, payable immediately. Both machines would require the input of sh.10,000 working capital throughout their working lives, and both machines have no expected scrap value at the end of their expected working lives of four years for the standard machine and six years for the de-luxe machine.

The forecast pre-tax operating net cash flows associated with the two machines are:

Years hence						
	1	2	3	4	5	6
Standard	25,500	22,860	24,210	23,210		
De-Luxe	32,030	26,110	25,380	25,940	38,560	35,100

The de-luxe machine has only recently been introduced to the market and has not been fully tested in operating conditions. Because of the higher risk involved, the appropriate discount rate for the de-luxe machine is believed to be 14% per year, 2% higher than the discount rate for the standard machine.

The company is proposing to finance the purchase of either machine with a term loan at a fixed interest rate of 11% per year. Taxation at 35% is payable on operating cash flows one year in arrears, and capital allowances are available at 25% per year on a reducing balance basis.

Required:

(a) to calculate for both the standard and the de-luxe machine:

(i) Payback period **(3 marks)**

(ii) Net Present Value **(6 marks)**

(b) Recommend, with reasons, which of the two machines Ceder Co should purchase.

(4 marks)

(c) If Ceder Co were offered the opportunity to lease the standard model machine over a four-year period at a rental of sh.15,000 per year, not including maintenance costs, evaluate whether the company should lease or purchase the machine. **(7 marks)**

Question Five

During the upcoming year, the stock price of Delinquent Jesters Inc. (DJ) is expected to go up to sh.290 or down to sh.170 with equal probabilities. The beta of the stock is equal to 0.75. The annual risk-free rate is 10.5%, and the expected annual return on the market is 16.5%. You are interested in replicating and pricing a European call option on DJ's stock. The option has a strike price of sh.212, and will mature in one year.

a. What is the current price of DJ's stock? **(4 points)**

b. Using the stock and borrowing/lending (at the riskfree rate), form a portfolio that will replicate the call option. How many shares of DJ will you buy/sell, and how much money will you borrow/lend? **(6 points)**

c. Use the portfolio derived in part (b) to price the call option. **(4 marks)**

d. What is the beta and expected return of the call option? **(3 points)**

e. Using the result from part (d), show that the price of the call option found in part (c) can also be derived by discounting the expected cash flow of the option. **(3 points)**