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Family Name					
Given Name/s					
Student Number					
Teaching Period	Semester 1, 2018				

FIN510 – Aspects of Corporate Finance	DURATION	
	Reading Time:	10 minutes
	Writing Time:	180 minutes
INSTRUCTIONS TO CANDIDATES		
<p>Please answer any 5 out of 7 questions</p> <p>All questions carry equal marks</p>		
EXAM CONDITIONS		
<p><u>You may begin writing from the commencement of the examination session.</u> The reading time indicated above is provided as a guide only.</p>		
This is a CLOSED BOOK examination		
Any calculator is permitted		
No handwritten notes are permitted		
No dictionaries are permitted		
ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED	
No additional printed material is permitted	1 x 16 Page Book 2 x Scrap Paper Formula Sheet/s	

**THIS EXAMINATION IS PRINTED
DOUBLE-SIDED.**

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LEFT BLANK.**

Answer Questions
Total Marks for this Examination: 60

The questions should be answered in the **Answer Booklet** provided

Answer any 5 out of 7 questions

Marks for each question are indicated. Suggested Time allocation for Examination: 180 Mins

Question 1 (12 Marks)

- A. David Morgan is considering an offer to sell his medical practice, allowing him to retire five years early. He has been offered \$500,000 for his practice and can invest this amount in an account earning 12 % per year. If the practice is expected to generate the following cash flows, should David accept this offer and retire now?

End of Year	Cash Flow
1	\$150,000
2	\$150,000
3	\$125,000
4	\$125,000
5	\$100,000

6 Marks

- B. Assume that you just won the state lottery. Your prize can be taken either in the form of \$50,000 at the end of each of the next 20 years or as a lump sum of \$500,000 paid immediately. If you expect to be able to earn 5% annually on your investments over the next 20 years, which alternative should you take?

6 Marks

Question 2 (12 Marks)

- A. Under what circumstances will a bond's *coupon rate* exceed its *coupon yield*? Explain in economic terms why this occurs. 3 Marks
- B. A \$100 par value bond has a *coupon rate* of 8 % and a *coupon yield* of 9 %. What is the bond's market price? 3 Marks
- C. Griswold Travel has issued 6-year bonds that pay \$30 in interest twice each year. The face value of these bonds is \$1,000 and they offer a *yield to maturity* of 5.5 %. How much are the bonds worth? 6 Marks

Question 3 (12 Marks)

A. The value of ordinary shares cannot be tied to the present value of future dividends because most companies don't pay dividends. Comment on the validity, or lack thereof, of this statement.

6 Marks

B. Martin King is analysing the shares of MIA Radiology. MIA's equity pays a dividend once each year, and it just distributed this year's \$0.85 dividend. The market price of the share is \$12.14. Martin estimates that MIA will increase its dividends by 7 % per year forever. After contemplating the risk of MIA's equity, Martin is willing to hold the shares only if they provide an annual expected return of at least 13 %. Should she buy MIA shares or not?
6 Marks

Question 4 (12 Marks)

A. When measuring the volatility of an investment's returns, why is it easier to focus on standard deviation rather than variance?

2 Marks

B. You purchase 1,000 shares of Spears Grinders stock for \$60 per share. A year later, the shares pay a dividend of \$1.50 per share and sell for \$69.

i. Calculate your total dollar return. 1 Mark

ii. Calculate your total percentage return. 1 Mark

iii. Do the answers to parts (i) and (ii) depend on whether you sell or continue to hold the shares after one year? 2 Marks

C. You invest \$30,000 in Treasury notes and \$50,000 in the market portfolio. If the risk-free rate equals 2% and the expected market risk premium is 6%, what is the expected return on your portfolio? 3 Marks

D. The expected return on the market portfolio equals 14%. The current risk-free rate is 6%. What is the expected return on a share with a beta of 0.65? 3 Marks

Question 5 (12 Marks)

A. Evan Enterprises has 10 million shares outstanding with a current market price of \$10 per share. There is one investment available to Evan, and its cash flows are provided below. Evan has a cost of capital of 10%. Given this information, determine the impact on Evan's share price and company value if capital markets fully reflect the value of undertaking the project.

Year	Cash Flow
0	-\$10,000,000
1	\$3,000,000

2	\$4,000,000
3	\$5,000,000
4	\$6,000,000
5	\$9,800,000

6 Marks

B. A project generates the following sequence of cash flows over six years:

Year	Cash Flow (in millions)
0	-\$50.00
1	\$4.00
2	\$5.00
3	\$6.00
4	\$7.33
5	\$8.00
6	\$8.25

- i. Calculate the *NPV* over the six years. The discount rate is 11%. 3 Marks
- ii. This project does not end after the sixth year, but instead will generate cash flows far into the future. Estimate the *terminal value*, assuming that cash flows after year 6 will continue at \$8.15 million per year in perpetuity, and then recalculate the investment's *NPV*. 3 Marks

Question 6 (12 Marks)

- A. Beta company has a capital structure containing 60% debt and 40% ordinary shares. Its outstanding bonds offer investors a 6.5% yield to maturity. The risk-free rate currently equals 5%, and the expected risk premium on the market portfolio equals 6%. The company's ordinary equity beta is 1.20.
 - i. What is the Beta company's required return on equity? 2 Marks
 - ii. Ignoring taxes, use your finding in part (i) to calculate the Beta company's weighted average cost of capital (*WACC*). 2 Marks
 - iii. Assuming a 40% tax rate, recalculate the Beta company's *WACC* found in part (ii). 1 Mark

iv. Compare and contrast the values for the Beta company's WACC found in parts (ii) and (iii).

1 Mark

B. An unlevered company operates in perfect markets and has net operating income (EBIT) of \$500,000. Assume that the required return on assets for companies in this industry is 12.5%. Suppose the company issues \$2 million worth of debt with a required return of 5% and uses the proceeds to repurchase outstanding shares.

i. What is the market value and required return of this company's shares before the repurchase transaction?

3 Marks

ii. What is the market value and required return of this company's remaining shares after the repurchase transaction?

3 Marks

Question 7 (12 Marks)

A. Given the lease payments and terms shown in the following table, determine the yearly after-tax cash outflows for each company. Assume that lease payments are made at the *beginning of each year*, that the company is in the 40% tax bracket, and that no purchase option exists.

Firm	Annual Lease Payment	Term of Lease
A	\$250,000	5
B	\$160,000	12
C	\$500,000	8
D	\$1,000,000	20
E	\$25,000	6

6 Marks

B. General Manufacturing Company (GMC) follows a policy of paying out 50% of its net income as cash dividends to its shareholders each year. The company plans to do so again this year, during which GMC earned \$100 million in net profits after tax. The company has 40 million shares outstanding and pays dividends annually. Assume that an investor purchased GMC shares a year ago at \$45 per share. The investor, who faces a personal tax rate of 15% on both dividend income and on capital gains, plans to sell the stock soon. Transactions costs are negligible.

i. Calculate the after-tax return this investor will earn if she sells GMC shares at the current \$54 share price prior to the ex-dividend date.

3

Marks

ii. Calculate the after-tax return the investor will earn if she sells GMC shares on the ex-dividend date, assuming that the price of GMC shares falls by the dividend amount on the

ex-dividend date.
Marks

3

Formula Sheet

1. $FV = PV (1 + r)^n$

$$FV = PV (1 + r \times n)$$

2. $PV = \frac{FV}{(1 + r)^n}$

3. $FV = \sum_{t=1}^n CF_t (1 + r)^{n-t}$

4. $FV = PMT \left[\frac{(1 + r)^n - 1}{r} \right]$

5. $FV (\text{annuity due}) = PMT \left[\frac{(1 + r)^n - 1}{r} \right] \times (1 + r)$

6. $PV = \sum_{t=1}^n CF_t (1 + r)^{-t}$

7. $PV = \frac{PMT}{r} \times \left[1 - \frac{1}{(1 + r)^n} \right]$

8. $PV (\text{annuity due}) = \frac{PMT}{r} \times \left[1 - \frac{1}{(1 + r)^n} \right] \times (1 + r)$

9. $PV (\text{deferred annuity}) = \frac{PMT}{r} \times \left[1 - \frac{1}{(1 + r)^n} \right] / (1 + r)^{x-1}$

10. $PV = \frac{PMT}{r}$

$$PV (\text{deferred constant perpetuity}) = \frac{PMT}{r} / (1 + r)^{x-1}$$

11. $PV = \frac{CF_1}{r - g}$ where $r > g$

$$PV (\text{deferred growing perpetuity}) = \frac{CF_x}{r - g} / (1 + r)^{x-1}$$

12. $FV = PV \times \left(1 + \frac{r}{m} \right)^{m \times n}$

13. $FV (\text{continuous compounding}) = PV \times (e^{r \times n})$

$$14. \text{ EAR} = \left(1 + \frac{r}{m}\right)^m - 1$$

$$15. \text{ EAR(continuous Compounding)} = e^r - 1$$

$$16. P_0 = C \times \left[\frac{1 - \frac{1}{(1+r)^n}}{r} \right] + \frac{M}{(1+r)^n}$$

$$17. P_0 = \frac{C}{2} \times \left[\frac{1 - \frac{1}{\left(1 + \frac{r}{2}\right)^{2n}}}{\frac{r}{2}} \right] + \frac{M}{\left(1 + \frac{r}{2}\right)^{2n}}$$

$$18. (1+r)^2 = (1+r_1)[1+E(r_2)]$$

$$19. (1+r_{nom}) = (1+i)(1+r_{real})$$

$$20. g = rr \times \text{ROE}$$

$$21. V_S = V_F - V_D - V_P$$

22. Total dollar return = income + capital gain or loss

23. Total % return = total dollar return \div initial investment

$$24. \text{ Variance} = \sigma^2 = \frac{\sum_{t=1}^N (R_t - \bar{R})^2}{N-1}$$

$$\text{ Variance} = \sigma^2 = \sum P_i (R_i - \bar{R})^2$$

$$25. \text{ Standard deviation} = \sigma = \sqrt{\text{Variance}}$$

$$26. \bar{r} = \sum_{i=1}^n r_i P_i = E(r)$$

$$27. \quad \sigma_{ij} = \frac{\sum_{t=1}^n (r_{i,t} - \bar{r}_i)(r_{j,t} - \bar{r}_j)}{n-1}$$

$$28. \quad \sigma(\tilde{r}) = \sqrt{\sum_{i=1}^n (r_i - \bar{r})^2 \times P_i}$$

$$29. \quad \rho_{ij} = \frac{\sigma_{ij}}{\sigma_i \sigma_j}$$

$$30. \quad \sigma_p^2 = \sum_{i=1}^n \sum_{j=1}^n x_i x_j \sigma_{ij}$$

$$\sigma_p^2 = x_1^2 \sigma_1^2 + x_2^2 \sigma_2^2 + 2x_1 x_2 \sigma_{12}$$

$$\sigma_p^2 = x_1^2 \sigma_1^2 + x_2^2 \sigma_2^2 + x_3^2 \sigma_3^2 + 2x_1 x_2 \sigma_{12} + 2x_1 x_3 \sigma_{13} + 2x_2 x_3 \sigma_{23}$$

$$31. \quad E(r_p) = r_f + \frac{E(r_m - r_f)}{\sigma_m} \times \sigma_p = r_f + E(r_m - r_f) \times \frac{\sigma_p}{\sigma_m}$$

$$E(r_p) = r_f + E(r_m - r_f) \beta_p \quad \text{where } \beta_p = \frac{\sigma_p}{\sigma_m}$$

$$32. \quad E(r_i) = r_f + E(r_m - r_f) \beta_i$$

$$33. \quad \beta = \frac{\text{covariance}(X_t, Y_t)}{\text{Variance}(X_t)}$$

$$34. \quad \text{Covariance}(X_t, Y_t) = \frac{\sum_{t=1}^n [(r_{i,t} - r_{f,t}) - \overline{(r_{i,t} - r_{f,t})}] \times [(r_{m,t} - r_{f,t}) - \overline{(r_{m,t} - r_{f,t})}]}{n-1}$$

$$35. \quad E(R_p) = w_1(R_1) + w_2(R_2) + \dots + w_n(R_n)$$

$$w_1 + w_2 + \dots + w_n = 1$$

$$36. \quad E(R_i) = R_f + \beta_i(E(R_m) - R_f)$$

$$37. \quad \text{PI} = \frac{\sum_{i=1}^n \frac{CF_i}{(1+r)^i}}{CF_0}$$

$$38. \quad \text{Operating Leverage} = \frac{\Delta EBIT}{EBIT} \div \frac{\Delta Sales}{Sales}$$

$$39. \quad \text{WACC} = \left(\frac{D}{D+E} \right) r_d + \left(\frac{E}{D+E} \right) r_e$$

$$40. \quad \text{WACC} = \left(\frac{D}{D+E} \right) (1-T_c) r_d + \left(\frac{E}{D+E} \right) r_e$$

$$41. \quad \text{WACC} = \left(\frac{D}{D+E+P} \right) r_d + \left(\frac{E}{D+E+P} \right) r_e + \left(\frac{P}{D+E+P} \right) r_p$$

$$42. \quad V = (E+D) = \frac{EBIT}{r}$$

$$43. \quad r_l = r + (r - r_d) \frac{D}{E}$$

$$44. \quad V_u = \left[\frac{EBIT(1-T_c)}{r} \right] = \frac{NI}{r}$$

$$45. \quad \text{PV Interest tax Shields} = \frac{(T_c \times r_d D)}{r_d} = T_c \times D$$

$$46. \quad V_L = V_U + PV_{\text{tax shields}} = V_U + T_c D$$

$$V_L = V_U + PV_{\text{tax shields}} - PV_{\text{bankruptcy costs}} + PV_{\text{agency costs OE}} - PV_{\text{agency costs OD}}$$

$$47. \quad G_L = \left[1 - \frac{(1-T_c)(1-T_{PS})}{(1-T_{PD})} \right] \times D$$

48. $D_t = \rho EPS_t$

49. $ax^2 + bx + c = 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

50. $BEP = \frac{\text{fixed costs}}{\text{Contribution margin}}$