COMMONWEALTH OF AUSTRALIA

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Warning

CHARLES DARWIN UNIVERSITY

Family Name	
Given Names	
Student Number	
Teaching Period	Semester 2, 2016

FINAL EXAMINATION	**DURATION**
FIN205 – Business Finance	Reading Time: **10** minutes Writing Time: **180** minutes

INSTRUCTIONS TO CANDIDATES

The examination has **two** sections:

Section A: Suggested Time: 90 mins	**Multiple Choice Questions**: Answer ALL 30 questions Marks as indicated by lecturer
Section B: Suggested Time: 90 mins	**Short Answer Questions**: Answer 4 of 4 questions Marks as indicated by lecturer

Section A must be answered on the Multiple Choice Answer sheet provided and must be handed in with your answer booklet. Please ensure that your name and student number are clearly indicated on your Multiple Choice Answer Sheet, your answer booklet and at the top of this examination paper.

Section B is to be answered in separate booklet.

1.2 Note that questions **ARE NOT** of equal value.
1.3 Read **ALL** questions carefully.

EXAM CONDITIONS

You may begin writing from the commencement of the examination session. The reading time indicated above is provided as a guide only.

This is a RESTRICTED OPEN BOOK examination
Any non-programmable calculator is permitted
No handwritten notes are permitted
Hard copy, unannotated English translation dictionary only

ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED
No additional printed material is permitted	1 x 8 Page Book 1 x 4-Multiple Choice Answer Sheet 1 x Scrap Paper

THIS EXAMINATION IS PRINTED DOUBLE-SIDED.

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Section A

Multiple Choice Questions

Total No of Marks for this section: 50

This section should be answered on the Multiple Choice Answer sheet. Please ensure that your name and student number have been written on the Multiple Choice Answer sheet and place in the completed answer Booklet.

Answers should be clearly marked, using black or blue pen. DO NOT write in pencil. If a choice for a particular question is subsequently discarded and a new answer chosen, cross out the original answer & clearly mark the new answer.

Marks for each question are indicated. Suggested Time allocation for Section A: 90 mins.

Section B

Short Answer Questions

Total No of Marks for this section: 50

This section should be answered in the Answer Booklet provided.

Marks for each question are indicated. Suggested Time allocation for Section B: 90mins

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Q. 1 (Total Marks: 10)

Herculio Mining has net operating income of $6 million; there is $60 million of debt outstanding with a required rate of return of 6 percent; the required rate of return on the industry is 12 percent; and the corporate tax rate is 35 percent. Assume there are corporate taxes but no personal taxes.

a) Calculate total income available to investors.

(Marks: 4)

b) Determine the present value of the interest tax shield of Herculio Mining, as well as the total value of the firm.

(Marks: 3)

c) Determine the gain from leverage if personal taxes of 18 percent on stock income and 28 percent on debt income exist.

(Marks: 3)

Please show your calculations clearly.

Q. 2 (Total Marks: 10)

Santamaria Corporation wishes to select the best of three possible computers, each expected to meet the firm's growing need for computational and storage capacity. The three computers—A, B, and C—are equally risky. The firm plans to use a 12 % cost of capital to evaluate each of them. The initial outlay and annual cash outflows over the life of each computer are shown in the following table.

Cash Flows

Year	Computer A	Computer B	Computer C
0	-$55,000	-$40,000	-$70,000
1	-$8,000	-$6,000	-$15,000
2	-$8,000	-$13,000	-$15,000
3	-$8,000	-$17,000	-$15,000
4	-$8,000	-$24,000	-$15,000
5	-$8,000		-$15,000
6	-$8,000		-$15,000

Required:

a) Calculate the *NPV* for each project over its life. Rank the projects in descending order based on *NPV.*

(Marks: 4)

b) Use the *equivalent annual cost (EAC)* approach to evaluate and rank the projects in descending order based on the EAC.

(Marks: 4)

c) Compare and contrast your findings in parts (a) and (b). Which project would you recommend that the firm purchase? Why?

(Marks: 2)

Please show your calculations clearly.

Q. 3 (Total Marks: 22)

Stanwell Corporation is attempting to determine whether to lease or purchase a new telephone system. The firm is in the 35% tax bracket, and its after-tax cost of debt is currently 5.5%. The terms of the lease and the purchase are as follows:

Lease

Annual beginning-of-year lease payments of $21,000 are required over the 5-year life of the lease. The lessee will exercise its option to purchase the asset for $28,000, to be paid along with the final lease payment.

Purchase

The $105,000 cost of the telephone system can be financed entirely with a 6.5% loan requiring annual end-of-year payments of $25,627 for five years. The firm in this case will depreciate the equipment using the straight-line method over five years. The firm plans to keep the equipment and use it beyond its 5-year recovery period. The maintenance costs of the telephone system are estimated to be $3,500 per annum.

Required:

a) Calculate the after-tax cash outflows associated with leasing option.

(Marks: 3)

b) Calculate the depreciation schedule using the accelerated method.

(Marks: 3)

c) Calculate the after-tax cash outflows associated with purchase option

(Marks: 10)

d) Calculate the present value of each cash outflow stream using the after-tax cost of debt.

(Marks: 3)

e) Which alternative—lease or purchase—would you recommend? Why?

(Marks: 3)

Please show your calculations clearly. The accelerated rate is calculated as 1.5 times the straight line rate.

Q. 4 (Total Marks: 8)

Salvatore Montalbano is a shareholder in the Enel Corporation. The current price of Enel's stock is $36 per share, and there are 1 million shares outstanding. Salvatore owns 20,000 shares, or 2% of the stock, which she purchased one year ago for $35 per share.

Assume that Enel makes a surprise announcement that it plans to repurchase 100,000 shares of its own stock at a price of $40 per share. In response to this announcement, Enel's stock price increases $2 per share, from $36 to $38, but this price is expected to fall back to $37 per share after the repurchase is completed.

Assume that Salvatore faces marginal personal tax rates of 15% on both dividend income and capital gains.

a) Calculate Salvatore's (realized) after-tax return in dollar terms and percentage terms from his investment in Enel shares, assuming that he chooses to participate in the repurchase program and all of the shares she tenders are purchased at $40 per share.

(Marks: 4)

b) How many shares will Salvatore be able to sell if all Enel shareholders tender their shares to the firm as part of this repurchase program and the company purchases shares on a pro rata basis?

(Marks: 2)

c) What fraction of Enel's total common equity will Salvatore own after the repurchase program is completed if she chooses not to tender his shares?

(Marks: 2)

Please show your calculations clearly

Formula Sheet

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

   FV = PV (1+ r x 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 (annuity due) = PMT $\left[\frac{(1+r)^n - 1}{r}\right]$ x $(1+r)$

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

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

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

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

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

PV (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 (continuous compounding)= PV $\times\left(e^{r\times n}\right)$

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

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

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

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

20. g = rr $\times$ 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. Variance = $\sigma^2 = \dfrac{\sum_{t=1}^{N}(R_t - \overline{R})^2}{N-1}$

Variance = $\sigma^2 = \sum P_i\left(R_i - \overline{R}\right)^2$

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

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

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

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

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

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

$$\sigma_p^2 = x_1^2\sigma_1^2 + x_2^2\sigma_2^2 + 2x_1x_2\sigma_{12}$$

$$\sigma_p^2 = x_1^2\sigma_1^2 + x_2^2\sigma_2^2 + x_3^2\sigma_3^2 + 2x_1x_2\sigma_{12} + 2x_1x_3\sigma_{13} + 2x_2x_3\sigma_{23}$$

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

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

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

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

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

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

$$w_1 + w_2 + ...w_n = 1$$

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

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

38. Operating Leverage = $\dfrac{\Delta EBIT}{EBIT} \div \dfrac{\Delta Sales}{Sales}$

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

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

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

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

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

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

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

46. $V_L = V_U + PVtaxshields = V_U + T_C D$

$V_L = V_U + PVtaxshields - PVbankruptacy\cos ts + PVagency\cos tsOE - PVagency\cos tOD$

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

48. $D_t = \rho EPS_t$

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

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

50. BEP = $\frac{fixed\cos ts}{Contributionm\arg in}$