**The Institute of Certified Management Accountants**

**FINANCIAL MANAGEMENT**

*INSTRUCTIONS TO CANDIDATES*

1. **CANDIDATE ID No:**_____

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   **EXAM PAPER IS TO BE HANDED IN INTACT INSIDE YOUR ANSWER SCRIPT BOOKS AT CONCLUSION OF EXAM.**

2. READING TIME IS OF    10        MINUTES DURATION
3. EXAMINATION IS OF     3         HOURS DURATION
4. This paper consists of 7 questions. PLEASE CHECK BEFORE COMMENCING.
5. This is a FINAL paper.
6. **THIS IS AN OPEN BOOK EXAM**. All material including Electronic hand held calculators is permitted excepting for laptop computers, and mobile phones. 7.Please read instructions at the top of each section carefully before answering. A set of **Formulae** is included at the end of the exam paper for reference. Please also use the **Mathematical Tables** needed for computation from those provided in standard textbooks if required.
7. Answer all questions in Part A (questions 1 to 5) and three questions in Part B (questions 6 to 10).  Answers for Questions 1 should be written on the space provided, and the question paper must be attached to the script book along with the rest of the exam paper.
8. **EXAM PAPER IS TO BE HANDED IN INTACT AT CONCLUSION OF EXAM.**

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## PART A (40 Marks)

### Answer ALL questions in this section.  (Questions 1 to 5)

**Question 1 (15 Marks)**

Select the one *most* appropriate correct response by placing a cross (X) in the cell in the table below for questions 1.1 to 1.15. Each question carries one mark. You may do the working on the question paper.

| Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| b |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| c |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| d |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| e |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

1.1 Assume you are evaluating capital budgeting projects for your company. Which of the following is not a relevant consideration for deciding on which project you may want to choose?
a. The change in the firm's fixed assets
b. The change in the firm's variable costs
c. The change in the firm's depreciation expense
d. The change in the firm's overhead expense
e. None of the above.

1.2 The expected long-run return in a share market is 16% in Hong Kong, where the market risk premium is 8.5%. Using the market risk premium, what is the risk-free rate of return for Hong Kong?
a. 4.5%
b. 7.5%
c. 10.0%
d. 10.5%
e. 12.5%.

1.3 The *Securities Market Line* in the CAPM is about:
a. Expected return of a security to the standard deviation of a security
b. Expected return of securities to expected return of portfolios
c. Efficient set of portfolios to the risk-free rate of return
d. Expected return to the beta and the market risk premium
e. Standard deviation to the systematic risk.

1.4 The company's capital structure refers to:
a. The way a company invests its assets
b. The amount of equity or capital in the company
c. The amount of dividends a company pays
d. The way in which a company's assets are financed
e. How much cash the firm holds.

1.5 A company's debt-to-equity ratio is 1.00. If it had no debt, its cost of equity would have been 14%. However, the company has debt, and its cost of debt is 10%. What is its cost of equity if there are no taxes or other imperfections?
a. 18%
b. 16%
c. 14%
d. 12%
e. None of the above.

1.6 When a firm issues more debt, the tax shield on debt _____, the agency costs on debt (i.e. the cost of financial distress) _____, and the agency cost of equity _____.
a. Increases; increases; increases
b. Decreases; decreases; decreases
c. Increases; increases; decreases
d. Decreases; decreases; increase
e. Increases; decreases; decreases.

1.7 S-mail Pty Ltd has capital value (debt and equity of $1000 million. The debt is valued at $400 million. The cost of debt and equity respectively are 12% and 15%. Which of the following is closest to the required rate of return applicable to the S-mail? (Assume there is no tax shield.)
a. 13.2%
b. 13.5%
c. 13.8%
d. 127.0%
e. None of the above.

1.8.    The Lucky Company's corporate tax rate is 36%. It has riskless debt in its capital structure, which makes up 40% of the total capital structure and equity is the other 60% of the total capital structure. The beta of the assets for this business is 0.8. Which of the following is closest to the value of equity beta of this company?
a.      0.80
b.      0.73
c.      0.53
d.      1.14
e.      1.47.

1.9.    If the investor in the common stock of a company pays personal income tax at the rate of 33% and the company announced a dividend amounting to $3.00: What is your expectation concerning the price of the stock?
a.      The price of the stock should decrease by $2.00 on the date of record (book closing)
b.      The price of the stock should decrease by $2.00 on the ex-dividend date
c.      The price of the stock should decrease by 4.48 on the date of record
d.      The price of the stock should decrease by $4.48 on the ex-dividend date
e.      Both b and c.

1.10    A new issue of common stock by an already listed public firm is called a/an:
a.      Initial public offer
b.      Seasoned equity issue
c.      Unseasoned equity issue
d.      Private placement
e.      A syndicated issue.

1.11    Which of the following would not generally be included in a typical bond issue?
a.      The basic terms of the bond issue
b.      Detail of the protective covenants to ensure no defaults
c.      Sinking fund arrangements
d.      Call provisions
e.      All of the above would generally be included.

1.12    A firm has 100 common stocks and 40 warrants outstanding: each warrant gives a right to buy 2 shares at $15 per share. The warrants issued five years ago are about to expire and the warrant holders have decided to exercise the warrants. Which of the following is nearest to the price per share of the common stock?
a.      $15.00
b.      $17.78
c.      $11.11
d.      $20.00
e.      None of the above.

1.13    Suppose that Coles Myer and Woolworths (Two large department stores in Australia) are going to merge. Ignoring potential implications for competition, the merger will be classified as a:
a.      Diversifying merger
b.      Horizontal merger
c.      Conglomerate merger
d.      Vertical merger
e.      None of the above.

1.14 Workcover Australia (an Insurance scheme for workplace accidents) awarded an injured worker four payments of $50,000 to be paid at the end of each of the next 4 years. The personal opportunity cost to this worker is 4%. Which of the following amounts is closest to the present value of these payments?
a. $178,495
b. $184,095
c. $181,495
d. $173,255
e. $200,000.

1.15 The mean and variance of two potential capital budgeting projects are: Project A (mean = 4.4% & variance = 0.11584) and Project B (mean = 4.6% & variance = 0.000304). The total investment in the two projects is $100 million, of which project A is $50 million. Compute the expected return and standard deviation of these two projects undertaken. Which of the following are closest to the values you have computed:
a. 5.625%; 37.2%
b. 4.50% ; 5.48%
c. 8.00% ; 8.20%
d. 5.00% ; 0%
e. 4.50% ; 0%.

**Question 2 (10 marks)**

Rohan Khamis was given a financing problem to solve by the Controller of Weiss Engineering.

"Weiss Engineering is planning to raise money using a public note issue. This is what Rohan has noticed in the market for notes of similar risk class: one-year note yields 5%; 2-year notes yield 5.4%; 3-year notes yield 5.70; 4-year notes yield 5.90; and 5-year notes yield 6%. If the company raises money using notes issues of different years, Rohan needs to compute the market price to estimate how many bonds need to be issued to raise a given undisclosed sum of money to be raised."
Required:

(i) Explain what a note issue is. (2 marks)
(ii) Compute the likely prices of a 2-year and a 5-year note issue. (4 marks)
(iii) If the sum of money to be raised is $20 million, how many 2-year notes have to be issued? Assume that there is no fee to be incurred to raise this money. (4 marks)

**Question 3 (5 marks)**

Jim's Gardening can purchase a piece of equipment for $3,600. There is no salvage value for this equipment after its two-year life. The equipment has two years' life, and will yield profits of $600 in year one and $4200 in year two. Jim's Gardening applies 15% as the average cost of capital for all its projects.
Required:

(i) Compute the project's nominal payback and discounted payback in years.

(2 marks)
(ii) Compute the project's net present value and profitability index. (3 marks)

**Question 4 (10 marks)**

You are an analyst employed by Merryweather Trust. You are given the following information on the Australian market: "With the Reserve Bank's actions recently, the Treasury yield is as low as 4%. The market yield has been downgraded to 12%." Your training indicates that this problem requires the application of the CAPM.

Required:

(i)     Estimate the market's risk premium suggested by this scenario.          (2 marks)
(ii)    If the Trust is planning to invest in a company with a beta of 1.5, what is the expected return for this investment?          (4 marks)
(iii)   Another firm you chose to invest in has an expected return of 11.2%. What would you expect its beta to be?          (4 marks)


## PART B  (60 Marks)

### Answer *any* three questions in this section.  (Questions 5 to 8)

**Question 5 (20 Marks)**

You are the financial controller of a bank. You assign Mr Robert Jarvis (a staff) a capital structure problem to evaluate. Here is the work carried out by Robert on two important client firms of the bank:

| Clients | Mean return | Std deviation | R-squared | beta | Standard error of beta |
|---|---|---|---|---|---|
| Firm A's common stock | 16% | 16% | 0.38 | 0.88 | 0.11 |
| Firm B's common stock | 14% | 21% | 0.26 | 0.94 | 0.14 |

The above risk estimates shown in the table were computed using historical information over a business cycle. The bank is interested in monitoring the two clients' risk profiles since both clients have large borrowings from the bank.

Required:

(i)     What is the relative risk-adjusted performance of the two client firms?  Explain your answer using the risk and return framework..          (4 marks)
(ii)    Which of the clients' stock prices were most closely related to the stock market? Estimate the proportion of stock's return accounted for by the market, and explain giving one reason why the difference may exist.          (4 marks)
(iii)   Using the theory on total risk, what are the firm-specific risk values of the two clients? Explain one source for this firm-specific risk          (3 marks)
(iv)    What are the theoretical expected returns using the CAPM with 5% $R_f$.          (6 marks)
(v)     Suppose the return in the market next year is equal to zero. What returns would you expect your client firms' stocks to yield? Explain why this is a possibility *ex post*.          (3 marks)

**Question 6 (20 Marks)**

Bob Price is the financial controller of a Melbourne-based company. He recruited a new CMA, Mr Shankar, for the capital management division of the company. Just prior to the recruitment of Shankar, Bob has already got the board's in-principle approval to go ahead with an investment that will cost an undisclosed sum of money. Bob is wondering whether to issue a consol or a straight coupon-paying bond to raise the sum of money for the project. Here are the details:

"If it is a consol, the coupon offered per year will be $50. A similar class of coupon-paying consols are selling at an average price of $500 per consol. The interest rate is expected to remain the same over the next 6 months needed to arrange the issue. The alternative is to issue a 5-year term bond with a coupon of $100 per year to fetch a price equal to the face value of $1,000."

Bob is aware that the interest rates are likely to go up in the next 6 months, as the expected economic growth rate of 4.4% will put pressure on the interbank market.
Required:

  (i)     Compute the cost of capital to the company for the two financing alternatives?(4 marks)
  (ii)    If the interest rate remains the same over the next 6 months, what would Shankar recommend to Bob about the two forms of financing? Explain.                          (7 marks)
  (iii)   Assume the Reserve Bank is likely to increase the interest rate by 2 percentage points in six months time. In that event, what would Shankar's recommendation be? Explain. (9 marks)

**Question 7 (20 Marks)**

Roy Torantino has been assigned to a merger analysis group for the evaluation of a current proposal. The two firms involved in the merger proposal, Company A and Company B, are currently valued as separate companies at $500 and $100 respectively. Both firms are in steel production in NSW, and a substantial synergistic gain is expected from a new proprietory smelting technique developed by Company B. The gain expected is from the lower cost of smelting at $20 per ton using this process compared with the Company A's $60 per ton. Given this gain, the combination of the two companies will be worth $700. Roy was informed that the Board of Company B wants $150 in cash (assume cash is an alternative in this merger). Company A has sufficient retained earnings to finance the project. There are 25 shares in Company A.
Required:

  (i)     What is the synergy value of this merger?                              (3 marks)
  (ii)    What is the premium for the merger and the net gain from merger?        (3 marks)
  (iii)   What is the per share value of A before merger?                         (3 marks)
  (iv)    If there are 10 shares outstanding in Company B, and the exchange is 7.5 shares of A-shares for one share of B, what is the share value of the merged firm?          (11 marks)
In all of the above computations, show your workings, and explain the relevant theory.

**Question 8 (20 Marks)**

Irvin Levy has just set up a company in a country, which has exempted the company from paying corporate tax, but interest costs are still deductible as expenses. Assume the company is about to commence operations now, and will close down at the end of one year. Thereafter the firm will be taken over by local investors at no cost (this is the incentive for giving tax exemption). Irvin estimates that the sale of goods brought into the country will yield an immediate profit of $10,000 now. At the end of one year, the profits will be another $10,000. Irvin has to decide on how much dividends to pay to himself and to the other partners of this firm. There are presently 10,000 shares outstanding with no debt at all in the company's capital structure.

  (i)     What is the per share *value of this company* before any decision is made to pay dividends?
                                                                                 (6 marks)
  (ii)    If Irvin had declared a dividend of $10,000, what is the value per share of this company if the firm paid $10,000 as dividends?                                     (4 marks)
  (iii)   Assume that the government in the host country changed its policy on the tax exemption. The tax liability is now 50% of profits. Compute the after-tax profits earned by the company, the price per share before dividend payment, and price per share price after the dividend payments. Explain why the share price reacts differently with and without dividend taxes.            (10 marks)

<div align="center">**FORMULAE**</div>

<div align="center">*Basic time value mathematics*</div>

**Single sum**: $FV_N = PV_o [(1+k)^N]$;  FV=Future Value; PV=Present Value

**Single sum**: $PV_o = CF_N (1+k)^{-N} = CF_N [\frac{1}{(1+k)^N}]$;  CF = Cash Flow annuity = **A** in text

**Annuity**:  $FV_N = CF \left[\frac{(1+k)^N - 1}{k}\right]$;  [FVIFA $_{k,N}$] $\leftarrow$ from Tables

**Annuity**: $PV_o = CF \left[\dfrac{\left(1 - \frac{1}{(1+k)^N}\right)}{k}\right] = CF\left[\frac{1}{k} - \frac{1}{k(1+k)^N}\right]$; [PVIFA $_{k,N}$] $\leftarrow$ from Tables

<div align="center">**Returns (r for investors; k = cost for corporation in text book)**</div>

**Share Return**: $R = [\frac{P_t + D_t}{P_{t-1}}] - 1$  $D_t$ = Dividends at time t; P = Price

**Bond Return**: $R = \frac{I_t + (P_t - P_{t-1})/N}{0.5(P_t + P_{t-1})}$  I = interest; P = Prices; N= Number of years

**Geometric Return**: $\left(1 + R_G\right) = \left[\left(1 + _0R_1\right)\left(1 + _1R_2\right)...\left(1 + _{n-1}R_n\right)\right]^{1/N}$ G is geometric

**Logarithmic Return**: $R_L = \ln[\frac{P_t + D_t}{P_{t-1}}]$  ln is logarithmic

**Average Return of 2 or more**: $R = \left[\frac{1}{N}\right]\sum_{j=1}^{N} R_j$  N=number of returns j=1, 2, …,N

**Expected Return**: $\bar{R} = \sum_{j=1}^{n} P_j R_j = E(R_j)$  $P_j$ = probability; $E(R_j)$ is written as µ

**Portfolio Return**: $\bar{R}_p = \sum_{i=1}^{N} W_i \bar{R}_i = \sum_{i=1}^{N} A_i E(Ri)$  W = wealth proportion = **A$_i$** in textbook

**Real Return**:  $\left(1 + K^r\right) = \left(1 + K^n\right) / (1+\pi)$  $K^N$ = Nominal K; $K^r$ = real K; $\pi$ = inflation

**Effective interest**: $i^{eff} = [(1 + i/12)^{12}] - 1$  i = annual interest rate

<div align="center">**Variance, covariance, correlations**</div>

**Variance**: $\sigma^2 = \sum_{j=1}^{n} P_j [R_j - \bar{R}]^2$;  $\bar{R}$ = average return; j = 1, 2,.., n; $P_j$=probability

**Standard Deviation**: $\sigma = \sqrt{\frac{1}{N}\sum_{t=1}^{N}(R_t - \bar{R})^2}$  for a *population*; $\sigma$ = risk

**Portfolio Variance**: $\sigma_p^2 = w_1^2 \sigma_1^2 + w_2^2 \sigma_2^2 + 2w_1 w_2 P_{12} \sigma_1 \sigma_2$;  $P_{12}$ = corr. coefficient

**Correlation Coefficient**: $P_{i,j} = Cov_{i,j}/\sigma_i \sigma_j$  Cov $_{i,j}$ = Covariance of i and j = $\sigma_{ij}$

**Bond Price**: $PV_0 = I\left[\dfrac{1-(1/(1+k)^n)}{k}\right] + \dfrac{FV}{(1+k)^n}$; $\quad PV_0 = P_{\text{Bond}}$: $\quad k = i$ = yield to maturity

**Share Price**: $P_0 = \dfrac{D_1}{K}$ and $P_0 = \dfrac{D_1}{K-g} = \dfrac{D_1}{K-[ROE(1-POR)]} = \dfrac{D_1}{K-[ROE(b)]}$

**Security Market Line**: $\overline{R_i} = R_f + \left[\overline{R_m} - R_f\right]\beta_i = \overline{K_E} = E(R_i) = R_f + [E(Rm) - R_f]\beta_i$

**Capital Market Line**: $\overline{R_p} = R_f + \left[\left(\overline{R_m} - R_f\right)\right]\sigma_p / \sigma_m = E(R_i) = [E(Rm) - R_f]\sigma_p / \sigma_m$

$\overline{K_E}$ = Required Return = r = Equity cost; "—" indicates expectation; $p$ = portfolio

**Beta of Security**: $\quad \beta_i = \text{cov}_{i,m} / \sigma_m^2$ $\qquad\qquad$ i = security; m = market

**Beta of Portfolio**: $\quad \beta_p = \sum_{i=1}^{N} X_i \beta_i$ $\qquad\qquad$ p = portfolio; i = individual security

**Market Model**: $\quad R_{it} = \alpha_i + \beta_i (R_{mt}) + e_{it}$ $\qquad$ R= 60 monthly returns; m= market; $e$=residual

**Total Risk**: $\quad \sigma^2 = \beta^2 \sigma_m^2 + \sigma_e^2$ $\qquad\qquad$ $e$ = residual

**Arbitrage Theory**: $E(R_i) = \mu_i + \beta_{j1}(F_1) + .. + \beta_{jN}(F_N) = R_i = a_i + b_{i1}(F_1) + b_{i2}(F_2)+\ldots$

**Net Present Value:** $NPV = 0 = \sum_{t=1}^{n}\dfrac{CF_t}{(1+K)^t} - CF_0$

**Break-even:** BEP = Cost / Margin = $[(FC + DEP)(1 - \tau_c)] / [(REV - VC)(1 - \tau_c)]$ $\quad \tau_c$ =tax rate

**Equivalent Annual Value:** EAV = NPV / [PVIFA $_{k,n}$]

**Weighted Average Cost:** $K_{WACC} = \dfrac{D}{A}K_D(1 - \tau_c) + \dfrac{E}{A}K_E$ $\quad \dfrac{D}{A}; \dfrac{D}{A}$ = ratios; $K_D$= Debt cost

**Cost of equity of Levered Firm:** $K_{E,L} = R_F + \beta_{E,L}\left[E(R_M) - R_F\right]$ using levered beta

**Cost of Equity of Levered Firm:** $K_{E,L} = K^{\text{E'}\Omega} + \dfrac{D}{E}(K_{E,U} - K_D)(1-\tau_c)$

**Hamada's Theorem:** $\beta_{E,L} = \beta_{E,U}\left[1 + \dfrac{D}{E}(1-\tau_c)\right]$ $\qquad\qquad$ using **Un**levered beta

**Adjusted Present Value:** APV = Base NPV + Financing Effect

**Adjusting Cost of Capital:** $K^* = K(1 - T^*L)$ $\qquad$ L=Leverage; T*=Tax rate in *future*

**Levered Firm Value:** $\quad V_L = V_U + \tau_c DBT$ $\qquad$ L= Levered; U=**Un**levered

**Levered Firm:** $V_L = V_U + [1 - \dfrac{(1-\tau_c)(1-\tau_{EQ})}{(1-\tau_{DB})}]$ **DBT** $\tau$=tax; $c$=corporate; $_{DB}$=debt; $_{EQ}$= equity

**Imputation K-Cost:** $K_{E,L}$ = DY + $R_F(1-T_I) + \beta_{E,L}$ [$K_m d_m T - R_F(1-T_I)$]; DY= Div yield

**Imputation Credit:** $I_C = (\tau_c DIV)/(1 - \tau_c)$ $\qquad\qquad$ $I_C$ is imputation credit

**Merger:** $V^{\text{aft}}_{AB} = V_A^{\text{bef}} + V^{\text{bef}}_B + Syn$; $Syn = \sum_{t=1}^{n}\dfrac{\Delta CF_t}{(1+K)^t}$; $NPV_{AB} = Syn - $ Premium paid

**Dividend Change Decision:** $DIV_t = a + c\, r\,(EPS_t) + c\,(DIV_{t-1}) + v_t$:
$\qquad\qquad$ r=payout; c=speed of adjustment; a=intercept; v=residual of this regression