

DP09

# Investment

14 OCTOBER 1999

1. Time allowed : Three (3) hours
2. Total number of questions : Five (5) questions on 4 pages
3. Number of questions to be answered : All five (5) questions  
Part A: One (1) question [20 marks]  
Part B: Four (4) questions [20 marks each]
4. Show details of workings, where appropriate. Silent, non-programmable calculators may be used.
5. Begin each answer to a new question on a fresh page.
6. Answer **all** questions in **English**.

**PART A**

1. **Only brief answers are required in this question (a few words or a few sentences). Answer ALL parts of the question.**

- (a) Explain what is meant when a share is quoted:
- (i) cum-dividend [1]
- (ii) ex-dividend [1]
- (b) (i) What is meant by the term “short selling”? [1]
- (ii) How does an investor profit from short selling? [1]
- (c) Explain what is “market capitalisation”. [2]
- (d) (i) The Kuala Lumpur Stock Exchange (KLSE) Composite Index is a “market-weighted” index. What does “market-weighted” mean? [3]
- (ii) Which of the following component stocks would have the greatest influence on the direction of the KLSE Composite Index? [3]

Stock	No. of issued shares	Share price (RM)
A	200,000,000	8.50
B	500,000,000	6.75
C	750,000,000	3.00

- (e) (i) What is a unit trust? [1]
- (ii) How is a unit trust formed? [1]
- (iii) Briefly describe **three** types of unit trust investment funds. [6]

(Total:20 marks)

**PART B****ANSWER ALL QUESTIONS**

2. You are given the following data for ABC Sdn Bhd:

**ABC SDN BHD  
INCOME STATEMENT DATA**

Items	1999 (RM'000)	1998 (RM'000)
Sales	800	600
Operating profit	92	60
Depreciation	18	12
Interest expense	20	8
Pre-tax profit	40	35
Income tax	12	10
Net profit after tax	28	25

**ABC SDN BHD**  
**BALANCE SHEET DATA**

Items	1999 (RM'000)	1998 (RM'000)
Fixed assets	120	80
Total assets	300	250
Current liabilities	50	80
Working capital	100	60
Long-term liabilities	42	15
Total shareholders' equity	208	155

- (a) Based on the above financial data, compute the following financial ratios for the years 1998 and 1999. You are also required to explain what each of the following financial ratios mean:
- (i) Current ratio [2]
  - (ii) Debt-to-equity ratio [2]
  - (iii) Interest coverage ratio [2]
  - (iv) Operating profit margin [2]
- (b) Explain the terms “put option” and “call option”. [4]
- (c) Indicate whether an **increase** in each of the following will result in an **increase** or a **decrease** in the value of call options:
- (i) stock price [1]
  - (ii) exercise price of the option [1]
  - (iii) variability of the underlying stock price (volatility) [1]
  - (iv) time remaining to expiration of the option [1]
  - (v) interest rate [1]
- (d) A call option on Stock X with an exercise price of RM30 is priced at RM2.00 per share.  
What is the maximum per share loss to the buyer of the call option? Explain your answer. [3]  
(Total:20 marks)
3. (a) What are the requirements for Corporate Membership of the Kuala Lumpur Stock Exchange (KLSE)? [5]
- (b) Explain the meaning of the following book entries:
- (i) Trade settlement [2]
  - (ii) Buyer settlement [2]
  - (iii) Seller settlement [2]

- (c) (i) Given the following information, calculate the theoretical ex-rights price per share:
- A rights issue of 1:5 at RM2.50; and
  - Market price at RM4.00 per share. [4]
- (ii) Given the following information, calculate the theoretical price per share:
- A 1:5 bonus issue and a 1:6 rights issue at RM2.00; and
  - Market price at RM4.50 per share. [5]
- (Total:20 marks)

4. (a) Below is the annual rate of return for ABC's stock over **four** years:

Year	1993	1994	1995	1996
Return (%)	14	17	-10	15

- (i) What is the arithmetic mean rate of return for ABC's stock over the **four** years? Show all workings. [2]
- (ii) What is the geometric mean rate of return for ABC's stock over the **four** years? Show all workings. [2]
- (b) The total risk of a security comprises **two** components i.e. systematic risk and unsystematic risk. Explain what are "systematic risk" and "unsystematic risk". [4]
- (c) (i) What does the beta of a stock measure? [2]
- (ii) You are given the following data on Stock A:

Items	Value
Return on the market	0.1200
Covariance between the return on Stock A and the return on the market	0.0288
Correlation coefficient of the return on Stock A and the return on the market	0.8000
Standard deviation of the return on Stock A	0.1800
Standard deviation of the return on the market	0.2000

Based on the above data, what is the beta of Stock A? Show all workings and interpret the result of your calculation. [3]

- (d) List and briefly explain **seven** main risks that bondholders are exposed to. [7]
- (Total:20 marks)
5. (a) A firm has an expected dividend payout ratio of 60%, a required rate of return of 11% and an expected dividend growth rate of 5%. Using the Earnings Multiplier Model, calculate the value of the stock today if you expect next year's earnings per share to be RM3.50. [4]
- (b) Briefly explain **three** balance sheet methods of valuation used to value equities. [3]

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- (c) (i) What is the difference between an “American” call option and a “European” call option? [1]
- (ii) Explain what the terms “in-the-money” and “out-of-the-money” mean for both a put option and a call option. [2]
- (d) Explain the roles of the following companies in the day-to-day operations of the Kuala Lumpur Stock Exchange:
- (i) Securities Clearing Automated Network Services Sdn Bhd (SCAN) [2]
- (ii) Malaysian Central Depository Sdn Bhd (MCD) [2]
- (iii) KLSE-Bernamea Real-Time Information Services Sdn Bhd (KULBER) [2]
- (iv) KLSE Chilong Systems Sdn Bhd [2]
- (v) Research Institute of Investment Analysis Malaysia (RIIAM) [2]

(Total:20 marks)

**OUTLINE ANSWERS****OUTLINE ANSWERS****PART A****Question 1**

**Candidates performed the best in the short answer questions. Almost all candidates scored above average marks for this question. These were direct questions and answers which can be found in the study manual and in past exam questions. Some candidates however were unable to answer questions particularly in relation to market capitalisation and unit trust. Candidates should be more thorough in their preparation.**

(a) *Page 12 of manual*

- (i) A share quoted 'cum-dividend' means that the buyer is entitled to a dividend attaching to it.
- (ii) A share quoted 'ex-dividend' means that the buyer is not entitled to dividend entitlement which is attached to it.

(b) *Page 12 of manual*

- (i) Short selling is a trading strategy whereby a person sells shares which he does not own at the time of selling, i.e. sell first and later buy back the same shares.
- (ii) The seller hopes to make a profit from the difference between the selling and buying price.

(c) *Page 9 of manual*

Market capitalisation refers to the total value of a company's shares listed on the Kuala Lumpur Stock Exchange based on the market price per share of the stock. The market capitalisation of a company changes with the number of ordinary shares issued as well as the company's daily market price.

(d) *page 54 of manual*

- (i) The KLSE composite index is weighted by the market capitalisation (equals to market price of a stock multiplied by the total number of ordinary shares of the company) of its component stocks. The index will respond in proportion to both the percentage rise in the share prices and the relative size of the companies.
- (ii) Stock B has the greatest influence on the direction of the index since its market capitalisation of RM3,375 million is the largest of the three stocks.

(e) *Page 30 & 31 of manual*

- (i) A unit trust is an open-end investment company.
- (ii) To form a unit trust, a sponsor, e.g. a financial institution, purchases a specific set of securities, deposits them with a trustee (a bank or trust company) and receives a number of shares representing proportional interest in those securities. The sponsor then sells these shares, known as redeemable trust certificates, to investors.
- (iii) 3 different types of unit investment funds include:
  - Balanced funds generally have a three-part investment objective, namely to conserve the investors' initial principal, to pay current income and to promote long-term growth of

both this principal and income. Balanced funds have a portfolio unit of bonds, preferred stocks and common stocks.

- Growth funds invest in the common stock of well-established companies. Their primary aim is to increase the value of their investment (capital gains) rather than a flow of dividends. Investors who buy growth funds are more interested in seeing the fund's share price rise than in receiving income from dividends.
- Index funds (market funds) are security portfolios which are designed to duplicate the composition and performance of a selected market index series. There are funds that focus on specific segments of the market, such as the international bond index funds and international stock index funds that target specific countries. There are also index funds that target small capitalisation stocks.

## PART B

### Question 2

**Most candidates were able to complete the accounting section but were unable to answer the derivative question. This led to only some of the candidates passing this question. Derivatives are an important area of this paper and candidates should ensure that they are prepared for simple option calculation questions.**

(a) *Page 74 to 81 of manual*

- (i) Current ratio measures a company's ability to pay its debts as and when they are due. It indicates the company's ability to meet future short-term financial obligations.

$$\begin{aligned} \text{Current Ratio} &= \frac{\text{Current Assets}}{\text{Current Liabilities}} \\ &= \frac{\text{Current Liabilities} + \text{Working Capital}}{\text{Current Liabilities}} \end{aligned}$$

$$1998 = (80+60)/80 = 1.75 \qquad 1999 = (100 + 50)/50 = 3$$

- (ii) Debt-to-equity ratio indicates what proportion of a company's capital is derived from debt compared to other sources of capital like ordinary share capital, preferred stocks and earnings. A higher proportion of debt capital compared to equity capital makes earnings more volatile and increases the probability that the company will not be able to meet the required interest payments and will default on the debt. Therefore, a higher proportion of debt-to-equity ratio indicates greater financial risk.

$$\text{Debt-to-Equity Ratio} = \frac{\text{Current \& long term liabilities}}{\text{Shareholders' equity}}$$

$$1998 = (80+15)/155 = 0.6129 \qquad 1999 = (50+42)/208 = 0.4423$$

- (iii) Interest Coverage Ratio indicates how many times the fixed interest charges are earned, based on the earnings available to pay expenses. It expresses the number of times interest payments are covered by a company's earnings. It measures the company's ability to pay interest.

$$\text{Interest Coverage Ratio} = \frac{\text{Earnings before interest \& tax}}{\text{Debt interest charges}}$$

$$1998 = (35+8)/8 = 5.375 \text{ times} \qquad 1999 = (40+20)/20 = 3 \text{ times}$$

- (iv) Operating profit margin is gross profit less sales, general and administrative expenses. It incorporates all the expenses associated with the ordinary business activities and is a measure of the overall operating efficiency of the company.

$$\text{Operating profit margin} = \frac{\text{Operating profit (before interest and tax)}}{\text{Net Sales}} \times 100$$

$$1998 = 60/600 = 10\%$$

$$1999 = 92/800 = 11.5\%$$

- (b) *Page 99 of manual*

A put option gives the holder the right to sell a given stock at a specified price during a specified time period. It is used by investors who also expect a stock price to decline during the specified period or by investors who own the stocks and want protection from a price decline. If a put option is exercised, the shares are sold by the owner (buyer) of the put contract to a writer (seller) of this contract who has designated to take delivery of the shares and pay the expected specified price.

A call option gives the holder an option to buy the common stock of a company within a certain period at a specified price called the strike price. It differs from a warrant however as it is not used by the company but by another investor who is willing to assume the other side of the transactions. Options are also typically valid for a shorter period than warrant. Call options are generally valid for less than a year.

- (c) *Page 105 of manual*

	Increase/Decrease in value of call option
(i) increase in stock price	increase
(ii) increase in exercise price	decrease
(iii) increase in variability of underlying stock price	increase
(iv) increase in time remaining to expiration of option	increase
(v) increase in interest rate	decrease

- (d) *Page 103 & 104 of manual*

Investors buy calls because they are bullish or optimistic about the price of the underlying stock. The use of calls minimises the initial investment, specifies the maximum loss that can be suffered and provides for maximum leverage. The investor's loss is limited to the premium, no matter how much the price of the stock declines. As the stock price rises, the price of the call will keep pace regardless of how high the price of the stock rises.

Therefore, the maximum loss to the investor is **RM2.00**, the option premium (price of the option). Should the underlying stock price rise above RM30.00, the investor will exercise the option with an exercise price of RM30.00 which is lower than the market price. Should the underlying stock price fall below RM30.00, then the investor will not exercise the option as he will be able to buy the stock cheaper in the market, and allow the call option to expire. The maximum loss to the investor will be the option premium of RM2.00.

### Question 3

**As with the previous paper, candidates seemed unprepared for questions relating to Regulatory Bodies, which carries 15% weighting. Many candidates were unable to calculate the theoretical ex-rights price per share. Candidates should go through all examples in the text book and past year exam questions to familiarise themselves with these calculation type questions. Candidates should understand the workings and not merely memorise them.**

(a) *Page 117 of manual*

The requirements for Corporate Membership of local and foreign stockbroking houses include :

- (i) a local corporation is required to acquire at least 51% of the equity of the stockbroking company and also have shareholders' funds of not less than RM100 million as the minimum amount approved by the Minister of Finance. If the corporation is a financial institution, it must have the approval of Bank Negara Malaysia to be eligible to apply for membership.
- (ii) A foreign stockbroking firm must be a reputable stockbroking house, whose eligibility to apply for membership has been approved by the Minister of Finance.

(b) *Page 128 of manual*

(i) **Trade settlement**

Trade settlement in the Central Depository System (CDS) does not refer to cash settlement. The CDS accounts will show the quantities of shares and not the values. Quantities of shares in the CDS accounts will be credited or debited as a result of buy or sell trades.

(ii) **Buyer settlement**

A buyer of securities in the CDS will have his CDS account credited on T+5. However as he has not paid his broker for the shares on that date, the shares cannot be utilised for transfer or withdrawal, until they have been paid for.

(iii) **Seller settlement**

A seller's CDS account is debited on T+5. To settle a sell trade transacted on T-day, he must have the shares to the credit of his account on T+5. If not, trade will fail.

(c) *Page 134 of manual*

- |   |                |
|---|----------------|
| (i) 5 existing shares at RM4.00   | RM20.00        |
| 1 rights issue at RM2.50  | RM2.50         |
| <b>6 shares worth</b>   | <b>RM22.50</b> |
| Theoretical ex-rights price = $\text{RM}22.50/6 = \text{RM}3.75$ per share  |                |
|   |                |
| (ii) 5 existing shares at RM4.50  | RM22.50        |
| 1 bonus share   | -              |
| 1 rights issue at RM2.00  | RM2.00         |
| <b>7 shares worth</b>   | <b>RM24.50</b> |
| Theoretical price per share = $\text{RM}24.50/7 = \text{RM}3.50$ per share. |                |

## Question 4

**The most poorly attempted question was on measures of investment returns and risk and return. Although candidates were familiar with calculating the beta of a stock, most of them were unable to interpret the formula. Most candidates further lost marks when they were unable to explain the main risks that bond holders are exposed to.**

(a) *Page 43 & 44 of manual*

(i) Arithmetic mean = 
$$\frac{\text{Sum of annual holding period yields}}{\text{No. of years during which the investment was held}}$$

$$\begin{aligned} &= (14\% + 17\% - 10\% + 15\%)/4 \\ &= 36\%/4 \\ &= 9.00\% \end{aligned}$$

(ii) Geometric mean = 
$$[(1 + R_1)(1 + R_2)\dots(1 + R_n)]^{1/n} - 1$$

$$\begin{aligned} &= 1.14 \times 1.17 \times 0.90 \times 1.15)^{1/4} - 1 \\ &= 1.0839 - 1 \\ &= 0.0839 \text{ or } 8.39\% \end{aligned}$$

(b) *Page 46 of manual*

**Systematic risk** is the general component of the total risk, which encompasses risks like interest rate risk, market risk, inflation risk, etc. This part of the total risk is unavoidable, because no matter how well an investor diversifies, the risk of the overall market cannot be avoided. If the market rises strongly, most stocks will appreciate in value and when the market declines strongly, most of the stocks will depreciate in value. Therefore, systematic risk (or market risk) is directly associated with overall movements in the general market or economy. Systematic risks are non-diversifiable.

**Unsystematic risk** is the non-market risk, i.e. not related to overall market variability. This is the risk that is unique to a particular security and is related to such factors as business and financial risks.

(c) *Page 48 of manual*

(i) A stock's beta is a relative measure of its systematic risk, the risk of an individual stock in relation to the overall market, as measured by the volatility of its returns. Beta focuses on the correlation ( $r$ ) between the stock price and the market index. For a security or portfolio, the beta can be calculated as follows:

$$\text{Beta} = \frac{\text{Covariance of stock returns to market returns}}{\text{Variance of market returns}}$$

(ii) Using the beta formula above, beta = 
$$\begin{aligned} &= 0.0288/(0.20 \times 0.20) \\ &= 0.0288/0.040 \\ &= 0.72 \end{aligned}$$

This means that for every 1% change in the market return, Stock A's return changes by 0.72%.

(d) *Page 93 of manual*

Some of the risks that bondholders are subject to include:

(i) **Interest rate risk** is the change in the price of a security as a result of changes in the market interest rates. Market interest rates cause differences and changes in the yields of bonds over time. There is an inverse relationship between bond prices and interest rates – when interest rates decline, the prices of bonds rise and when the interest rates rise, the prices of bonds decline.

- (ii) **Default risk** is the risk that the issuers of the bond will default on their payment of the interest and/or the principal amount at the time specified in the indenture.
- (iii) **Reinvestment rate risk.** In the calculation of yield-to-maturity, certain assumptions are made about the reinvestment of the coupons received during the life of the bond. If the stated yield-to-maturity is actually to be earned, cash flows must be reinvested at the stated yield-to-maturity.
- (iv) **Inflation risk** is the risk of the real return being less than the nominal return. In fixed income securities, like bonds, the payment in Ringgit is fixed and hence, the value of the payment in real term declines as the price level rises.
- (v) **Maturity risk** refers to the further into the future an investor goes into purchasing a long-term security, the more risk there is in investment (other things being equal).
- (vi) **Call risk.** Bonds will not be called unless it is to the issuer's advantage; it is not likely to be the bondholder's advantage. When interest rates decline, bonds carrying higher coupon rates are likely to be called. The call risk to a bondholder, therefore, is that higher-coupon bonds will have to be given up.
- (vii) **Liquidity (marketability) risk.** A security is liquid if it can be sold easily and quickly with (at most) small price concessions. Although treasury securities are very liquid, the corporate bond market is less.

### Question 5

**Equities valuation is an important area which candidates should focus on. Despite this, some candidates were incapable of calculating the value of a stock and failed to explain the balance sheet methods of valuation used to value equities. Many candidates also did not know the difference between the "American" and "European" type of options.**

- (a) *Page 68 & 69 of manual*

Earnings Multiplier = Price/Earnings Ratio

$$= \frac{D_1/E_1}{k - g}$$

where  $D_1/E_1$  = dividend per share/earnings per share

= expected dividend payout ratio

k = required rate of return for the stock

g = expected growth rate in dividends

$$\text{Therefore the PE ratio} = \frac{0.6 \text{ (dividend payout ratio)}}{0.11 - 0.05} = 10$$

And the value of the stock today = 10 X RM3.50 = RM35.00

- (b) *Page 71 of manual*

The three balance sheet valuation methods are:

- (i) **Book Value Method**

The book value of the Net Tangible Asset (NTA) is used as a valuation of the company's worth, whereby:

$$\text{NTA/share} = \frac{\text{Shareholders' funds}}{\text{Total no. of issued shares}}$$

(ii) **Replacement Value**

The accounts-derived net tangible asset above is adjusted to reflect the replacement value of key assets like land and buildings, machinery, etc.

(iii) **Liquidation Value**

The accounts-derived net tangible assets above is adjusted to reflect the liquidation value of the company's key assets, especially machinery. It can also be the estimated market value of selling divisions of a company to others.

(c) *Page 100 of manual*

(i) American options allow the holders to exercise them any time up to and including the expiration day. European options permit the holders to exercise them only on the expiration day.

(ii) In-the-money

For a call option, in-the-money means that the stock price is higher than the exercise price. For a put option, in-the-money means that the stock price is less than the exercise price.

**Out-of-the-money**

For a call option, out-of-the-money means that the stock price is lower than the exercise price. For a put option, out-of-the-money means that the stock price is higher than the exercise price.

(d) *Page 116 of manual*

(i) The Securities Clearing Automated Network Services Sdn Bhd (SCAN) is the central clearing house of the KLSE. It provides the information technology-related services to the rest of the KLSE group of companies.

(ii) The Malaysian Depository Sdn Bhd (MCD) implements and operates the Central Depository System, which is the KLSE scripless settlement system.

(iii) KLSE-Bernama Real-Time Information Services Sdn Bhd (KULBER) compiles and disseminates real-time share price and other relevant financial economic information to subscribers and other information vendors.

(iv) KLSE Chilong Systems Sdn Bhd is involved primarily in the marketing of computerised display systems and services providing real-time information dissemination.

(v) Research Institute of Investment Analysis Malaysia (RIIAM) helps upgrade the investment technology standard in Malaysia.