

DP09

Investment

10 APRIL 2003

1. Time allowed : Three (3) hours
2. Total number of questions : Five (5) questions
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**.
7. A blank page is provided at the end of the question paper for rough work.

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) (i) Identify and briefly describe **eight** obligations of the Kuala Lumpur Stock Exchange (KLSE). [8]
- (ii) Briefly describe **five** requirements for Individual Membership of the KLSE. [5]
- (b) Briefly describe when “false trading” or a misleading appearance of active trading takes place. [2]
- (c) Briefly describe **five** objectives of the Malaysian Central Depository Sdn Bhd. [5]
- (Total:20 marks)

PART B

ANSWER ALL QUESTIONS

2. (a) You are given the following data (assume the conversion of warrants to shares is one-to-one):

	STA Bhd	CIR Bhd	REC Bhd	SQU Bhd	LIN Bhd	DIA Bhd
Warrant price (RM)	2.00	2.50	1.50	1.80	4.00	2.80
Share price (RM)	5.00	8.00	2.50	2.50	15.00	4.00
Exercise price (RM)	5.00	9.50	2.00	1.50	13.00	1.40
Warrant life (year)	5	5	3	3	1	1
Share price volatility	35%	55%	55%	52%	45%	50%
Share dividend yield	1%	2%	4%	0%	4%	1%

- (i) (aa) Calculate the warrant premium (expressed as a percentage of its share price) of STA Bhd and CIR Bhd. Show all workings. [2]
- (bb) Which company (STA Bhd or CIR Bhd) has a higher warrant premium? Briefly explain why this is so. [1]
- (ii) Briefly explain the following statements (no calculations are required):
- (aa) The warrants of CIR Bhd have a higher warrant premium than the warrants of REC Bhd. [2]
- (bb) The warrants of REC Bhd have a lower warrant premium than the warrants of SQU Bhd. [2]
- (cc) The warrants of LIN Bhd have a higher warrant premium than the warrants of DIA Bhd. [2]
- (b) Identify and briefly describe **four** characteristics of preference shares. [4]
- (c) Briefly explain the difference between an “offer for sale” and a “public issue of shares” in an initial public offering. [2]
- (d) When compared to other instruments like equities and derivative securities, list **three** advantages of investing in fixed income instruments. [3]
- (e) In addition to the benefit of managing risks associated with holding the underlying asset position, identify **two** other benefits of derivative securities. [2]
- (Total:20 marks)

3. (a) Explain the difference between the risk measured by standard deviation and beta. [2]

(b) You are given the following data:

Stock	Expected P/E	Beta	Standard deviation
ABC Bhd	11.5x	1.0	40%
BCD Bhd	11.3x	0.8	30%
CDE Bhd	11.9x	1.4	55%
Market	12.0x	1.0	37%

(i) You are a fund manager managing a RM100million portfolio. After careful analysis of various indicators and their trends, you concluded that the stock market is ready for a bull run over the next few months.

If you had to choose only one stock from the above table, which stock would you add to your portfolio? Based only on the data in the table above, briefly explain why. [3]

(ii) If you expect the stock market to rise by 15%, how much do you expect your chosen stock in (i) above to rise? Show all calculations. [3]

(c) You are given the following data:

	31 Dec 1999	31 Dec 2000	31 Dec 2001	31 Dec 2002
TOT Bhd's share price (RM)	25.50	28.00	28.25	31.00
TAT Bhd's share price (RM)	12.30	11.50	11.00	10.00
TUT Bhd's share price (RM)	5.55	4.20	4.75	3.15
TET Bhd's share price (RM)	8.00	7.80	7.80	7.50
Stock market index (points)	1,256.95	1,178.45	1,180.56	956.32

(i) Which stock do you think would be likely to have a negative beta? Briefly explain why. [3]

(ii) Which stock do you think would have the highest standard deviation? Briefly explain why. [3]

(iii) Assuming that there is no dividend payment, calculate the arithmetic mean rate of return for TAT Bhd between 31 December 1999 and 31 December 2002. Show all workings. [2]

(d) You are given the following data:

Stock SIS Bhd		Stock SUS Bhd		Stock SOS Bhd	
Probability of return	Possible return	Probability of return	Possible return	Probability of return	Possible return
35%	12%	45%	25%	25%	8%
30%	2%	20%	-3%	45%	1%
35%	-18%	35%	-25%	30%	-10%

(i) Which stock do you think would have the lowest standard deviation? Briefly explain why (no calculations are required). [2]

(ii) Calculate the expected rate of return for Stock SIS Bhd. Show all workings. [2]
(Total:20 marks)

4. You are given the following information on the bond market:

Fixed Income Instruments	Return
Return on US Government T-bills	3.5%
Return on Malaysian Government T-bills	4.0%
Return on Malaysian corporate bond, rated AA	5.0%
Return on Malaysian corporate bond, rated A	6.0%
Return on Malaysian corporate bond, rated BBB	7.0%

You are also given the following information on Mon Bhd and Fri Bhd:

Item	Mon Bhd	Fri Bhd
Standard deviation	55%	35%
Beta	1.4x	0.8x
Current earnings per share	25.0sen	48.5sen
Current dividend per share, D_0	5.0sen	20.0sen
Expected dividend growth rate	6%	5%
Required rate of return on stock market	12%	12%

- (a) (i) Given the above data, calculate the required rate of return using the Capital Asset Pricing Model for both Mon Bhd and Fri Bhd. [2]
- (ii) Which company has a higher required rate of return? Show all workings. [1]
- (b) Calculate the intrinsic value for Fri Bhd using its required rate of return and the Infinite Period Dividend Discount Model. [3]
- (c) State **three** key assumptions of the Infinite Period Dividend Discount Model. [3]
- (d) State **two** weaknesses of a Dividend Discount Model. [2]
- (e) Both Mon Bhd and Fri Bhd operate businesses only in Malaysia and have no debt on their balance sheets, and both stocks are easily traded on the Kuala Lumpur Stock Exchange. Mon Bhd is involved in the rubber manufacturing industry while Fri Bhd is involved in the food industry.
- Identify **one** key risk that differentiates both companies. Briefly explain what that risk is. [2]
- (f) A year later, Fri Bhd borrowed to finance its capital expenditure for a new project to be launched in a new country. From 0.0x, its debt-to-equity ratio rose to 1.2x. If the required rate of return on the stock market is still 12% and interest rates remained the same, state whether the required rate of return on Fri Bhd would rise, decline or remain the same. Briefly explain why. [2]
- (g) (i) Draw a diagram of a call option with an exercise price of RM5.00 at expiration. [1]
- (ii) Draw a diagram of a put option with an exercise price of RM4.00 at expiration. [1]
- (h) In addition to using a call option as a means of speculating in a rising market and for hedging in a rising market, identify **three** other reasons for buying call options. [3]
- (Total:20 marks)

5. (a) You are given the following data on **six** different bonds, all of which have a face value of RM100:

Bond	A	B	C	D	E	F
Price (RM)	90.70	69.20	96.63	82.54	99.64	92.18
Coupon (%)	5	0	5	0	5	0
Yield to maturity (%)	7.25	7.50	6.25	6.50	5.25	5.50
Tenure (years)	5	5	3	3	1½	1½
Rating	AA	A	AA	A	AA	A

- (i) Your manager has just told you that he wants to buy some five-year bonds because he expects interest rates to decline substantially in the next four weeks. Given the above table, which bond would you choose? Briefly explain why. [2]
- (ii) You have just purchased Bond A for RM90.70 in year 2003. Based on the above table and assuming that the yield curve remains unchanged over the next two years, what do you expect the price of Bond A to be in 2005? Briefly explain why. [2]
- (iii) Briefly explain why the yield-to-maturity for Bond F is higher than Bond E. [2]
- (iv) Assume that you purchased Bond A for RM90.70 in 2003. Your manager says he expects the price of Bond A to go above the face value of RM100 some time before the bond matures. Briefly explain whether this is possible. [2]
- (v) Briefly explain what is the shape of the yield curve that can be inferred from the bonds in the above table. [2]
- (b) STU Bhd's 2:5 bonus issue and 1:5 rights at RM2.50 a share has just been approved. The last traded cum-price of STU Bhd was RM6.00 a share.
- (i) Calculate the theoretical ex-price of STU Bhd. [2]
- (ii) Calculate the value of rights. [2]
- (iii) Calculate the adjustment factor arising from the bonus and rights issue. Show your workings. [1]
- (iv) If shareholders' funds of STU Bhd is RM4.50 per share before the bonus and rights issue, calculate the shareholders' funds per share after the bonus and rights issue. [2]
- (c) List **three** reasons why companies issue bonus issues. [3]

(Total:20 marks)

OUTLINE ANSWERS

PART A

Question 1

- Candidates answered poorly for this question on the regulatory bodies requiring mainly memory work. Candidates who fared poorly could not state the obligations of the KLSE nor were they able to describe the objectives of the MCD.
- Most candidates, however, could describe when false trading takes place.

1.
 - (a)
 - (i)
 - To provide, regulate and maintain facilities for conducting the business of a stock exchange in Malaysia
 - To promote and protect the interests and welfare of the members of the Exchange
 - To provide an authority for the interpretation and means for the enforcement of the rules relating to member companies on the Stock Exchange and to undertake arbitration between members by the Committee of the Exchange
 - To establish just and equitable principles in the securities market
 - To make and amend from time to time rules relating to member companies, and for trading by member companies
 - To provide investors' service and to promote interest in the securities market as a whole
 - To promote the commerce and industries of Malaysia and to augment the facilities with which it may be conducted
 - To provide and enact listing requirements and undertakings relating to listed companies and to enunciate and enforce the Code for Mergers, Takeovers and Acquisitions
 - To institute a policy of market surveillance and corporate disclosure
 - (ii)
 - Be a holder of a Dealer's Representative Licence
 - Be at least 21 years of age
 - Be a person of good character and high business integrity
 - Be a Malaysian citizen
 - Be committed to pay a prescribed membership fee and contribution of the KLSE Fidelity Fund
 - (b)
 - A buy or sell transaction is effected which does not involve any change in beneficial ownership of the shares
 - An offer to sell and purchase any securities at a specified price which is substantially the same as the first-mentioned price
 - (c) The main objectives of the Malaysian Central Depository Sdn Bhd are as follows:
 - to establish and operate a system for the central handling of securities, whether or not they are listed on any stock exchange
 - to increase the capacity of clearing and settlement of securities
 - to reduce the costs and risks of settlement of securities
 - to enhance the liquidity and efficiency of the Malaysian capital market
 - to promote Malaysia's competitiveness by complying with the latest international standards for settlement and clearing of securities

PART B

Question 2

- This question was poorly answered as many candidates could not demonstrate a good understanding of the determinants of warrant premiums when presented with “real-life” data. Hence, when asked to calculate the premium for warrants, many were not able to do so, although it was a relatively straightforward question.
- Candidates could neither explain nor differentiate that in an IPO, an offer for sale entailed shareholders selling their existing shares, while a public issue of shares entailed the company issuing new shares.

2. (a) (i) (aa) For STA Bhd:

$$\begin{aligned} & \text{Warrant premium} \\ &= \frac{(\text{Warrant Price} + \text{Exercise Price} - \text{Share Price})}{\text{Share Price}} \times 100\% \\ &= \frac{[(\text{RM}2.00 + \text{RM}5.00 - \text{RM}5.00) \div \text{RM}5.00]}{\text{RM}5.00} \times 100\% \\ &= 40\% \end{aligned}$$

For CIR Bhd

$$\begin{aligned} & \text{Warrant premium} \\ &= \frac{(\text{Warrant Price} + \text{Exercise Price} - \text{Share Price})}{\text{Share Price}} \times 100\% \\ &= \frac{[(\text{RM}2.50 + \text{RM}9.50 - \text{RM}8.00) \div \text{RM}8.00]}{\text{RM}8.00} \times 100\% \\ &= 50\% \end{aligned}$$

(bb) Therefore, CIR Bhd has the higher premium. This is consistent with the fact that CIR Bhd has a higher volatility of 55% for the stock compared to 35% for STA Bhd.

(ii) (aa) CIR Bhd should have a higher warrant premium as it has a longer warrant life of five years compared to REC Bhd which has a shorter warrant life of three years.

(bb) REC Bhd should have a lower warrant premium because holders of REC Bhd warrants have to forgo the high dividend yield of 4%. Warrant holders of SQU Bhd does not have to forgo any dividend payment.

(cc) LIN Bhd has a higher premium because of its higher leverage value. LIN Bhd's leverage or gearing is 3.8x compared to DIA Bhd's leverage of 1.4x

- (b)
- Limited Ownership Rights. Owners of preference shares usually have no voting rights.
 - Fixed Dividend. Annual dividend payments are fixed at a certain percentage of the par value of the shares.
 - Dividend Priority Over Ordinary Shares. Preference shareholders are entitled to a fixed dividend payment out of the company's earnings before dividends are paid out to ordinary shareholders.
 - Priority in Asset Claims. Preference shares are also referred to as senior securities. This is because in the event of the company being liquidated, preference shareholders, like bondholders, have a prior claim on the company's assets over the ordinary shareholders.
- (c) An offer for sale involves the sale of block of shares from existing shareholders to the public. A public issue is the offer of shares for sale by the company to the public.
- (d)
- Relatively higher current income compared with dividends
 - Yield-to-maturity secures the future income stream
 - Priority ranking over ordinary shareholders
- (e)
- For portfolio allocation purposes
 - For income generation through the taking a position in these products

Question 3

- Many candidates could not explain the difference between both beta and standard deviation as risk measures. Candidates' lack of understanding of these risk measures also showed when they were presented with the share price performance of a group of stocks and asked to pick out the most likely stock with negative beta and highest standard deviation.
- Candidates were also not able to calculate the arithmetic rate of return, which is a basic formula from the textbook.

3. (a) Standard deviation measures the **total risk** of one security or a portfolio of securities. It is the deviation of each observation from the mean of the observations. Beta is a relative measure of systematic risk – i.e. the risk of an individual stock in relation to the overall market.

(b) (i) Based only on the data above, if you are confident that the market is going to run up, choose the high beta stock. In this case, choose CDE Bhd. If the stock market runs up, then the high beta stock should rise by a higher percentage.

(ii) Based on a beta of 1.4x for CDE Bhd, if the stock market rises 15%, then CDE Bhd should rise by the following amount:

$$15\% \times 1.4 = 21\%, \text{ or } 40\% \text{ faster than the market}$$

(c) A negative beta means that the expected changes in stock price moves in the opposite direction of the stock market. Stock TOT Bhd should have a negative beta since it has moved in the opposite direction of the stock market.

(i) From observation, stock TUT Bhd should have the highest standard deviation since it is the most volatile stock of the four. It has fluctuated by 43% between its high in 1999 and its low in 2002.

(ii) Arithmetic mean of TAT Bhd:

Year 1	RM11.50 ÷ RM12.30	=	0.935
Year 2	RM11.00 ÷ RM11.50	=	0.957
Year 3	RM10.00 ÷ RM11.00	=	0.909

$$\text{Year 1} \quad 0.935 - 1 \quad = \quad -0.065$$

$$\text{Year 1} \quad 0.957 - 1 \quad = \quad -0.043$$

$$\text{Year 1} \quad 0.909 - 1 \quad = \quad -0.091$$

So, arithmetic mean for TAT Bhd:

$$(-0.065 - 0.043 - 0.091) \div 3 \quad = \quad \mathbf{-6.63}$$

(d) (i) Stock SOS Bhd should have the lowest standard deviation since it has the narrowest range of possible returns. These returns vary from -10% to 8%, a range of only 18%.

(ii) Expected rate of return for SIS Bhd:

$$(35\% \times 12\%) + (30\% \times 2\%) + (35\% \times -18\%)$$

$$4.2\% + 0.6\% - 6.3\% \quad = \quad \mathbf{-1.5\%}$$

Question 4

- Candidates used the IPDDM when it was clearly stated that CAPM should be used to calculate the required rate of return.
- The IPDDM is used to derive an intrinsic value (or fair value) of the stock while the CAPM is used to calculate a discount rate which may be subsequently used in the IPDDM.
- In part (b), when subsequently asked to derive the intrinsic value for stocks using the IPDDM, candidates instead applied the formula for determining the intrinsic price-to-earnings multiple.
- Candidates also lost valuable marks when they were unable to state the key assumptions behind the IPDDM.

4. (a) (i) The required rate of return for Mon Bhd:

$$\begin{aligned}
 k &= \text{Risk Free Rate} + \text{Risk Premium} \\
 k &= \text{M'sian Govt T-Bill} + \text{Beta} \times (\text{Market Return} - \text{Risk Free Rate}) \\
 k &= 4.0\% + 1.4 \times (12.0\% - 4.0\%) \\
 k &= 15.2\%
 \end{aligned}$$

The required rate of return for Fri Bhd:

$$\begin{aligned}
 k &= \text{Risk Free Rate} + \text{Risk Premium} \\
 k &= \text{M'sian Govt T-Bill} + \text{Beta} \times (\text{Market Return} - \text{Risk Free Rate}) \\
 k &= 4.0\% + 0.8 \times (12.0\% - 4.0\%) \\
 k &= 10.4\%
 \end{aligned}$$

(ii) Mon Bhd has a higher rate of return because of its higher beta.

(b) $V = \frac{D_1}{k - g}$

$$\begin{aligned}
 &= \frac{20.0\text{sen} \times (1+0.06)}{10.4\% - 5\%} \\
 &= \frac{21.2\text{sen}}{5.4\%} \\
 &= \text{RM3.93}
 \end{aligned}$$

(c) Three assumption of the Infinite Period Dividend Discount Model:

- Dividends grow at a constant rate
- Constant growth rate continues for an infinite period
- Required rate of return is higher than the infinite growth rate

(d)

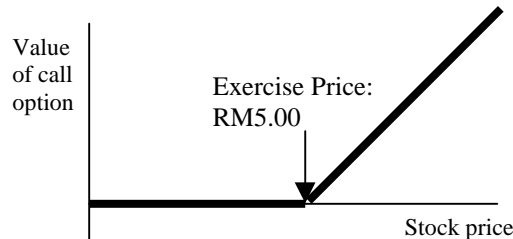
- An accurate forecast of dividend payments to infinity is an impossible task.
- Many investors want capital gains and not dividends.

(e) The key risk is business risk. This is the risk, which is associated with doing business in a particular industry or environment. It is the uncertainty of rate of return, which is caused by the nature of the company's business. The more uncertain the earnings to the company, the more uncertain the rate of return to the investors. Therefore, the investors will demand a risk premium that is based on the uncertainty, which is attributable to the company's principal business activity.

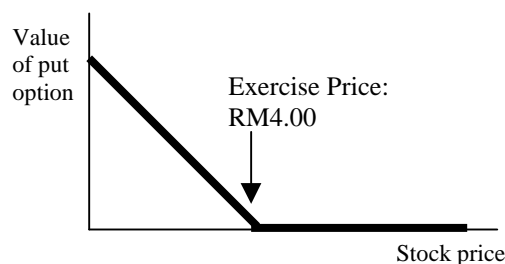
Note: Since both are involved in Malaysia, there is not exchange rate risk or country risk. There is also no financial risk or liquidity risk.

(f) The required rate of return on Fri Bhd would increase given the higher financial risk. Beta for Fri Bhd would rise.

(g) (i)



(ii)



- (h)
 - To substitute an existing long futures position
 - To average existing long positions in a declining market
 - To protect futures positions

Question 5

- Candidates scored well in calculating the adjustment factor following a rights and bonus issue. However, candidates displayed a lack of understanding of the inverse relationship between bond prices and interest rates.
- Candidates lost marks when they were not able to explain that credit spreads were responsible for the difference in yields between two bonds with the same maturity but with different credit ratings.
- Many candidates were also not able to infer the shape of the yield curve – whether it is rising, declining or humped – when given the yields for bonds with similar ratings but different maturities.

5. (a) (i) Choose Bond B as it is a zero coupon bond which means that it has a large part of its yield to maturity in the form of capital gains.
- (ii) Assuming that the yield curve does not change, the 5-year bond becomes a 3-year bond, which means that the price should be about RM96.63.
- (iii) Bond F has an A-rating compared to Bond E that has an AA rating.
- (iv) Yes, it's possible when the yield to maturity drops below the 5% coupon rate.
- (v) Given that the longer the tenure the higher the YTM, one can infer that it is a rising yield curve.
- (b) (i)
- | | |
|---------------------------------------|-----------------------|
| 5 existing shares at RM6.00 per share | RM30.00 |
| 2 bonus issue | RM 0.00 |
| 1 rights issue at RM2.50 per share | RM 2.50 |
| 8 shares worth | <u>RM32.50</u> |
- Theoretical ex-rights price $RM32.50 \div 8 \text{ shares} = RM4.06 \text{ per share}$
- (ii)
- | | |
|--------------------------|---------------|
| Ex-rights per share | RM4.06 |
| Less: subscription price | <u>RM2.50</u> |
| Value of rights | <u>RM1.56</u> |
- (iii) Adjustment factor = $\frac{\text{theoretical ex-price}}{\text{last traded cum price}}$
- = $4.06 \div 6.00$
- = **0.677**
- (iv) Adjusted shareholders' fund per share = $RM4.50 \times 0.677$
- = RM3.05
- (c)
- To increase the amount of issued and paid up capital in line with the company's assets and earnings
 - To increase the float of shares in the market
 - To capitalise the Share Premium account