UNIVERSITI KUALA LUMPUR
BUSINESS SCHOOL

FINAL EXAMINATION

MARCH 2026 SEMESTER

COURSE CODE	:	EGB20703
COURSE TITLE	:	FINANCIAL ECONOMICS 1
PROGRAMME NAME	:	BACHELOR OF SCIENCE (HONOURS) IN ANALYTICAL ECONOMICS
DATE	:	22 JUNE 2026
TIME	:	2:00PM - 5:00PM
DURATION	:	3 HOURS

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.
2. This question paper is printed on both sides of the paper.
3. This question paper consist of TWO sections.
4. Answer ALL questions for Section A.
5. Section B consist of four questions. Answer THREE (3) questions only.
6. Please write your answer on the answer booklet provided.
7. Please answer all questions in English only.
8. Please answer MCQ/EMQ questions using OMR sheet. ☐ *Tick if applicable*
9. Refer to the attached Formula/ Appendies. ☐ *Tick if applicable*

THERE ARE 8 PAGES OF QUESTIONS INCLUDING THIS PAGE

SECTION A (Total: 40 marks)

Answer ALL questions.

Please use the answer booklet provided.

Question 1

Financial markets channel funds from savers to borrowers, significantly impacting economic efficiency and business growth.

(a) Differentiate between "direct finance" and "indirect finance" within the structure of financial markets.

(4 marks)

(b) A young entrepreneur wants to launch a new technology startup but struggles to borrow funds directly from individual retail investors due to high transaction costs and the investors' fear of adverse selection. Demonstrate how a financial intermediary (such as a commercial bank) can solve these two specific problems to facilitate the flow of funds to the entrepreneur.

(6 marks)

Question 2

Firms often use alternative criteria, such as the internal rate of return, alongside or instead of net present value when comparing the viability of different investments.

(a) Define the "Internal Rate of Return" (IRR) in relation to a project's cash flows and state the basic IRR decision rule for accepting an independent project.

(4 marks)

(b) An investor is deciding between leaving their capital in a guaranteed, interest-bearing bank account or using those funds to purchase a piece of land that is expected to appreciate in value over five years. Without using any numbers or calculations, apply the concept of the "opportunity cost of capital" to explain how the investor must theoretically choose between these two alternatives using the IRR method.

(6 marks)

Question 3

Applying the theoretical concepts of index models to the real world requires analysts to adjust raw historical data to create better forecasts for future risk.

(a) Explain the concept of "estimation risk" and describe how it negatively impacts the application of the full-covariance (Markowitz) model for large groups of securities.

(4 marks)

(b) In the industry version of the Index Model (such as the Beta Book), analysts frequently apply an adjustment factor to a stock's raw, historical beta. Apply your knowledge of firm life-cycles and market averages to theoretically justify why analysts intentionally push these historical beta estimates closer toward 1.0.

(6 marks)

Question 4

The Arbitrage Pricing Theory (APT) relies heavily on the dynamics of well-functioning markets and the construction of portfolios to determine asset pricing.

(a) Explain the theoretical concept of an "arbitrage opportunity" in financial markets. State the fundamental assumption of the Arbitrage Pricing Theory (APT) regarding the persistence of these opportunities.

(4 marks)

(b) Suppose a portfolio manager constructs a highly diversified portfolio based on a single-factor macroeconomic model. Describe how this specific action of diversification theoretically affects the two primary sources of return volatility—common macroeconomic factors and firm-specific events—within the manager's portfolio.

(6 marks)

SECTION B (Total: 60 marks)

Answer THREE (3) questions only.

Please use the answer booklet provided.

Question 1

AlphaTech Corporation is evaluating two different manufacturing machines to upgrade its assembly line. Both machines require an initial investment of RM10,000. The firm's cost of capital (discount rate) is 10%. The expected cash inflows for the projects are as follows:
Machine A: Year 1 = RM5,000; Year 2 = RM4,000; Year 3 = RM3,000.
Machine B: Year 1 = RM1,000; Year 2 = RM3,000; Year 3 = RM9,000.

(a) Calculate the Net Present Value (NPV) for both Machine A and Machine B at the firm's 10% cost of capital. Show your discount factor workings clearly.

(8 marks)

(b) Calculate the Profitability Index (PI) for both machines.

(4 marks)

(c) Based on your calculations in (a) and (b), analyze the results to determine which machine the firm should accept if the projects are independent. Which machine should they accept if they are mutually exclusive?

(4 marks)

(d) Suppose macroeconomic factors cause the firm's cost of capital to suddenly rise to 15%. Calculate the new NPV for both machines at this 15% rate. Evaluate why Machine B's NPV is more severely negatively impacted by this interest rate increase than Machine A's NPV.

(4 marks)

Question 2

An analyst is using the Single-Index Model to evaluate Equity-Z. The following information is provided:

Risk-free rate (R_f) : 4%

Expected return on the market index $E(R_m)$: 11%

Standard deviation of the market index (σ_m) : 15%

Beta of Equity-Z (β_Z) : 1.40

Residual standard deviation of Equity-Z $\sigma(e_Z)$: 20%

(a) Calculate the expected rate of return for Equity-Z using the Single-Index Model.

(4 marks)

(b) Calculate the total variance of Equity-Z. Based on your result, determine the percentage of total risk that is attributed to systematic factors versus firm-specific factors.

(6 marks)

(c) Suppose the actual forecasted return for Equity-Z over the next year is 15.5%. Calculate Jensen's Alpha (α) for this security. Analyze whether the security is currently underpriced or overpriced relative to the market index.

(4 marks)

(d) The Full-Covariance Markowitz model is theoretically superior for portfolio optimization. However, practitioners often prefer the Single-Index Model. Evaluate the trade-offs between these two models, specifically addressing the concepts of "estimation risk" and the practical constraints of a 100-security portfolio.

(6 marks)

Question 3

You are an investment analyst reviewing the performance of the "Gamma Equity Fund." Over the past 5 years, the fund generated an average annualized return of 14.5%. During this same period, the risk-free rate was 3.0%, and the broad market index generated a return of 10.5%. You are given the following statistical data: The covariance between the Gamma Fund's returns and the market's returns is \$0.045\$. The standard deviation of the market's returns (σ_m) is 15%

(a) Calculate the variance of the market. Using this variance and the provided covariance, mathematically derive the Beta (β) of the Gamma Equity Fund. Analyze what this specific beta value indicates about the fund's systematic risk relative to the market.

(6 marks)

(b) Using the Beta derived in part (a), calculate the Jensen's Alpha of the Gamma Equity Fund. Based on your calculation, analyze whether the fund manager successfully added active value through skill, or if the 14.5% return was merely a result of taking on excessive systematic risk.

(6 marks)

(c) A recurring critique from the academic world is that CAPM is almost impossible to empirically validate because the "true market portfolio" is unobservable. Evaluate the implications of using a proxy index (like the S&P 500) for empirical tests. If a regression analysis using this proxy yields a zero alpha, does this strictly validate the CAPM theory?

(4 marks)

(d) During a severe financial crisis, market liquidity unexpectedly dries up. Evaluate how the concept of "liquidity betas" explains why the prices of certain stocks crash much harder than others during these periods.

(4 marks)

Question 4

An institutional investor purchases a 5-year corporate bond with a face value of RM1,000 that pays a 6% coupon annually. The current market purchase price of the bond is RM918.00.

(a) Formulate the standard bond pricing equation to find the Yield to Maturity (YTM). Using the interpolation (trial-and-error) method with test discount rates of 8% and 9%, analyze the cash flows to calculate the approximate YTM of this bond.

(6 marks)

(b) Assume the investor holds the bond for exactly 2 years. During this time, they receive two annual coupon payments. They successfully reinvest the first year's coupon in a money market fund yielding 5%. At the exact end of year 2, the market YTM for the remaining 3 years of the bond's life falls to 7%. Calculate the selling price of the bond at the end of year 2.

(5 marks)

(c) Using your results from part (b), calculate the investor's annualized Holding Period Return (HPR) for this 2-year investment window.

(4 marks)

(d) Interest rate risk is made up of two opposing forces: Price Risk and Reinvestment Risk. What was the effect of the fall in market yields (from the original YTM to 7%) on each of these forces for this particular investor? Find out whether the decline in interest rates was good or bad for their 2 year annualised return in the end. Explain the rationale.

(5 marks)

END OF EXAMINATION PAPER

FORMULA

Future Value

$$FV = PV\,(1+i)^n$$

Effective Annual Rate

$$EFF(APR, m) = \left(1+\frac{APR}{m}\right)^m - 1$$

- Where;

APR = annual percentage rate

m = the number of compounding periods per year

Present Value

$$PV_{FV}(FV, i, n) = \frac{FV}{(1+i)^n}$$

Utility Function

$$U = E(r) - \frac{1}{2}A\sigma^2$$

Where;

U = utility

E (r) = expected return on the asset or portfolio

A = coefficient of risk aversion

s^2 = variance of returns

½ = a scaling factor

Expected Return of the complete portfolio

$$E(r_c) = r_f + y\left[E(r_P) - r_f\right]$$

Variance

$$\sigma_C^2 = y^2\sigma_P^2$$

Slope/Sharpe ratio

$$Slope = \frac{E(r_P) - r_f}{\sigma_P}$$

Two-Security Portfolio Return

$$E(r_p) = w_D E(r_D) + w_E E(r_E)$$

Two-Security Portfolio: Risk

$$\sigma_p^2 = w_D^2\sigma_D^2 + w_E^2\sigma_E^2 + 2w_D w_E Cov(r_D, r_E$$

Single Factor Model

$$r_i = E(r_i) + \beta_i m + e_i$$

Single Index Model Regression Equation

$$R_i(t) = \alpha_i + \beta_i R_M(t) + e_i(t)$$

Expected Return Beta Relationship

$$E(R_i) = \alpha_i + \beta_i E(R_M)$$

Variance Single-Index Model

$$\sigma_i^2 = \beta_i^2\sigma_M^2 + \sigma^2(e_i)$$

Covariance Single-Index Model

$$Cov(r_i, r_j) = \beta_i\beta_j\sigma_M^2$$

Portfolio Variance

$$\sigma_P^2 = \beta_P^2\sigma_M^P + \sigma^2(e_P)$$

Portfolio sensitivity

$$\beta_P = \frac{1}{n}\sum_{i=1}^{n}\beta_i$$

Market Risk Premium

$$E(R_M) = \bar{A}\sigma_M^2$$

Where

$\bar{A}$ = investors risk aversion

σ_M^2 = variance of the market portfolio

CAPM

$$E(r_M) = r_f + \beta_M\left[E(r_M) - r_f\right]$$

Multifactor Model Equation

$$r_i = E(r_i) + \beta_{iGDP} GDP + \beta_{iIR} IR + e_i$$

Multifactor SML Models

$$E(r_i) = r_f + \beta_{iGDP} RP_{GDP} + \beta_{iIR} RP_{IR}$$

Bond Pricing

$$P_B = \sum_{t=1}^{T} \frac{C_t}{(1+r)^t} + \frac{ParValue}{(1+r)^T}$$

P_B= Price of the bond

C_t = interest or coupon payments

T = number of periods to maturity

r = semi-annual discount rate or the

Yield to Maturity

Yield to Maturity (YTM) = [Annual Coupon + (FV – PV) ÷ Number of Compounding Periods)] ÷ [(FV + PV) ÷ 2]

Holding Period Return

$$Holding\ Period\ Return = \frac{Income + (End\ Of\ Period\ Value - Initial\ Value)}{Initial\ Value}$$