CFA UK LEVEL 4 CERTIFICATE IN INVESTMENT MANAGEMENT (IMC)

UNIT 2 – INVESTMENT PRACTICE

MOCK EXAM TWO

VERSION 20 – TESTED FROM 1 DECEMBER 2022

Key facts about the IMC Unit 2 exam

Syllabus	IMC Unit 2 Version 20 tested from 1 December 2022
Tax tables for this syllabus	Tax tables used for IMC Syllabus Version 20
Number of questions	105
Time allowed	2 hours 20 minutes
Types of questions used	• Standard multiple choice – Candidates select 1 option of 4. • Item set – Candidates are given a short scenario with several questions associated with it. The material given in the case study does not change with the questions. • Gap fill – Candidates must enter a value into the answer field. There are specific formatting requirements and these formatting requirements are always given in the question.

Important information regarding what happens on the day

Calculator used	• From 1st June 2020 IMC candidates will not be permitted to use a handheld calculator during their examination. The onscreen calculator will be available for all questions during the exam. • The IMC calculator policy provides further information on the onscreen calculator.

Please click here for all Terms and Conditions pertaining to the Investment Management Certificate examination(s).

This IMC mock exam should NOT be viewed as a primary source of learning. By its nature, a mock exam paper will only cover proportion of the learning outcomes. Candidates are strongly advised to develop a fundamental understanding of the curriculum in order to demonstrate the competence required to pass the examination.

Question Allocation

Question allocation across the syllabus is balanced on the guidance of psychometric and industry specialists. The following question allocation for Version 20 of the IMC is provided as a broad indication of the relative 'weighting' of different parts of the syllabus in IMC examinations from 1 December 2022.

CONTENT AREA	TOPIC	TOPIC NAME	QUESTION ALLOCATION
Quantitative methods	7	Quantitative methods	10–20
Economics	8	Microeconomics	5-15
	9	Macroeconomics	
Accounting	10	Accounting	10-20
Asset classes	11	Equities	25-30
	12	Fixed income	
	13	Derivatives	
	14	Alternatives	
Investment theory, management and measurement	15	Portfolio management	25-30
	16	Investment products	
	17	Investment performance measurement	

1. **Company XYZ plc has 1,000,000 shares in issue. The firm also has 50,000 warrants where each warrant will create 3 new shares. If the value of an equivalent American call option is £2.40, what is the value of a warrant?**

(a) £7.20

(b) £6.26

(c) £5.43

(d) £4.16

2. **An investor holds 200 shares with a current market value of £5.00. The company pays a one for ten scrip dividend. The ex-scrip price will be closest to:**

(a) £4.40

(b) £4.54

(c) £4.62

(d) £5.00

3. **When conducting SWOT analysis (strengths, weaknesses, opportunities and threats), which two factors are most likely to be considered to be internal, firm-specific factors?**

(a) Threats and opportunities

(b) Threats and weaknesses

(c) Strengths and opportunities

(d) Strengths and weaknesses

4. **What is the internal rate of return on a zero coupon bond with five years until redemption, a par value of £1,000, and a current market price of £883.85?**

(a) 2%

(b) 2.5%

(c) 3%

(d) 3.5%

5. A credit card charges 2.5% interest per month on outstanding credit balances. The annual percentage rate (APR) charged to two decimal places is:

Important! You should enter the answer *only* in numbers *strictly* using this format: **00.00**

Do not include spaces, letters or symbols (but decimal points and commas should be used if indicated).

6. Into which phase of the product life cycle would the additional 'maintenance stage' and 'proliferation stage' best fit?

(a) The introduction phase

(b) The obsolescence phase

(c) The maturity phase

(d) The decline phase

7. A fund manager holds a portfolio of UK equities with a beta (β) value of 1.1, which is currently valued at £120 million. The FTSE 100 index is currently valued at 6200. December FTSE 100 futures contracts are priced at 6500. How many December FTSE 100 futures must the fund manager sell to fully hedge the portfolio?

(a) 1,846 contracts

(b) 1,964 contracts

(c) 2,031 contracts

(d) 2,651 contracts

8. The price of sugar falls by 4% which leads to an 8% increase in the quantity of sugar demanded. What is the price elasticity of demand for sugar?

(a) –2

(b) –0.5

(c) 0.5

(d) 2

9. Consider a two-year 5% annual coupon bond with a face value of £100. If an investor's required return increases from 3.5% to 5%, what is the change in the price of the bond?

(a) +£4.77

(b) +£3.39

(c) -£1.98

(d) - £2.85

10. Which of the following methods of equity issuance is least likely to result in the sale of shares to the public?

(a) Offer for sale

(b) Offer for sale by tender

(c) Offer for sale by subscription

(d) Placing

11. Which of these would be best described as an intangible asset?

(a) Work in progress

(b) Trade receivables

(c) Goodwill

(d) Cash

12. Acquisitor PLC acquires 100% of the shares of Purchased PLC for £1.5m. Prior to the acquisition Purchased PLC has the following shareholder funds:

	£
Share capital	400,000
Share premium	50,000
Retained profit	600,000

What is the goodwill on acquisition?

(a) £50,000

(b) £450,000

(c) £600,000

(d) £900,000

13. Which of the following is most accurate with respect to an inferior good?

(a) As income rises; the demand curve shifts to the left

(b) As income rises; the demand curve gets steeper

(c) As income falls; the demand curve gets steeper

(d) As income rises; the demand curve shifts upwards

14. Which theory about the shape of the yield curve suggests that the bond market is made up of a number of different parts, each of which has its own supply and demand conditions?

(a) Liquidity preference theory

(b) Market segmentation theory

(c) Economic theory

(d) Pure expectations theory

15. An investor purchases 5,000 shares at £4.50 per share. The shares pay out a dividend of 30p per share following which all of the shares are immediately sold for £4.75 per share. What is the holding period return (HPR)?

(a) 10.88%

(b) 10.92%

(c) 11.84%

(d) 12.22%

16. Which of these 'Greeks' is commonly used to denote the sensitivity of option price with respect to interest rates?

(a) Theta

(b) Gamma

(c) Rho

(d) Vega

17. In an open economy with no government sector, the marginal propensity to import is 0.3, and the marginal propensity to consume domestic goods is 0.6. The value of the multiplier is:

(a) 1.43

(b) 1.51

(c) 1.53

(d) 1.61

18. A company with a price-earnings ratio of 15x pays a dividend of 20p per share with dividend cover of 3x. Calculate the share price of the company in pence.

Important! You should enter the answer *only* in numbers *strictly* using this format: **000**

Do not include spaces, letters or symbols (but decimal points and commas should be used if indicated).

19. Which of these sectors is most likely to benefit from a bear market?

(a) Financials

(b) Consumer staples

(c) Transportation

(d) Capital goods

20. Which of the following could best be considered as a key difference between hedge funds and conventional funds?

(a) Hedge fund managers have less flexibility than conventional asset managers

(b) Hedge funds are generally less active than conventional funds

(c) Hedge funds are generally less liquid investments than conventional funds

(d) Hedge funds are generally more transparent than conventional funds

The next 4 questions are associated with the following exhibit. The material given in the exhibit will not change.

Exhibit 1 reports economic data for the US and fictional country of Islandia.

	1 year interest rate	Spot exchange rate equal to US $1.00	1-year forward exchange rate equal to US $1.00	1-year forecast inflation	1-year forecast real GDP growth rate
US	1.25%	1.00	1.00	1.25%	1.25%
Islandia	1.50%	0.89	0.91	2.25%	2.00%

When answering these questions assume that purchasing power parity (PPP) applies but ignore transaction and transport costs.

21. When rounded up, the one-year forward exchange rate quoted for the Islandia currency in relation to the US dollar quoted in Exhibit 1 is:

(a) Overvalued by 0.01 relative to the PPP rate

(b) Overvalued by 0.02 relative to the PPP rate

(c) Undervalued by 0.01 relative to the PPP rate

(d) Undervalued by 0.02 relative to the PPP rate

22. Assume that there are zero transaction costs and the interest rate, inflation and GDP forecasts in Exhibit 1 are realised. If the Islandia currency appreciates relative to the US$ over the coming year, which of the following would be the most likely explanation for the increase?

(a) Inflation forecasts are higher

(b) Real GDP is higher relative to the US

(c) Real interest rates are higher

(d) They are overvalued according to the interest rate parity hypothesis

23. Which of the following inferences about Islandia relative to the US are more plausible based upon the information provided in Exhibit 1?

(a) The balance of payments will rise because the forecast GDP is higher

(b) The balance of payments will rise because the forward exchange rate is at a premium

(c) The balance of payments will rise because the real exchange rate is forecast to fall

(d) The balance of payments will rise because the real exchange rate is forecast to rise

24. Using the formula for Interest Rate Parity (IRP) and data provided in Exhibit 1, calculate the difference between the one-year forward exchange rate for Islandia in Exhibit 1 and the one-year forward exchange rate implied by the IRP.

Important! You should enter the answer *only* in numbers *strictly* using this format: **0.0000**

Do not include spaces, letters or symbols (but decimal points and commas should be used if indicated).

25. An investment manager enters into an agreement to receive the return on a nominal investment of $50 million in the S&P 500 in exchange for fixed payments of 4% of a nominal value of $50 million. Such an agreement would be best described as an:

(a) Equity swap

(b) Equity put option

(c) Interest rate swap

(d) Equity call option

26. A key difference between a warrant on ABC Ltd ordinary shares, and an exchange traded call option on ABC Ltd ordinary shares is that:

(a) An increase in the value of ABC shares will increase the value of the call option and decrease the value of the warrant

(b) Exercise of a warrant will increase the number of ABC shares, unlike the exercise of the call option

(c) Call options can be traded, warrants cannot be traded

(d) Call options generally have longer lives than warrants

27. An initial amount of £100,000 is invested at a constant rate of 2%. Interest earned is continuously compounded. What is the value of the investment after 10 years?

(a) £120,000

(b) £121,899

(c) £122,140

(d) £123,543

28. A company buys a manufacturing machine for £300,000. It has an economic life of five years and an anticipated residual value of £50,000. It is depreciated using the reducing balance method.

The depreciation charge on the machine in year two is closest to:

(a) £50,000

(b) £63,144

(c) £90,360

(d) £93,452

29. What is the primary motivation for a fund manager to lend stocks?

(a) To reduce taxation

(b) To enhance returns

(c) To hedge the portfolio

(d) To reduce risk

30. Classical unemployment would be best described as being due to:

(a) Workers being between jobs

(b) The level of real wages being too high

(c) Inflexible wages and prices leading to an aggregate demand deficiency

(d) Workers being unemployed by choice

31. An investor buys a put option and a call option on the same asset, which both have the same expiry date and strike price. The position created is best described as a:

(a) Long straddle

(b) Short straddle

(c) Long strangle

(d) Short strangle

32. The monthly returns of a fund over the past year are:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
%	2.5%	3.0%	2.4%	1.0%	0.8%	0.4%	1.1%	–1.4%	0.2%	–2.2%	–3.1%	1.4%

What is the median monthly return?

Important! You should enter the answer *only* in numbers *strictly* using this format: **0.0**

Do not include spaces, letters or symbols (but decimal points and commas should be used if indicated).

33. When will private equity funds generally distribute carried interest to the fund manager?

(a) When investors make their initial investment

(b) Monthly

(c) Annually

(d) Following the successful exit of an investment

34. Which of the following is most accurate for a downward sloping yield curve?

(a) Forward rate < Spot rate < Yield

(b) Forward rate > Spot rate > Yield

(c) Spot rate < Yield < Forward rate

(d) Yield < Forward rate < Spot rate

35. Which of the following would be most appropriate for a company wishing to raise capital from its shareholders?

(a) Scrip issue

(b) Rights issue

(c) Share buyback

(d) Stock split

36. The Keynesian model for an economy describes the:

(a) Long term adjustment of the economy where prices and wages are 'fully flexible'

(b) Long term adjustment of the economy where prices and wages are 'sticky'

(c) Short term adjustment of the economy where prices and wages are 'fully flexible'

(d) Short term adjustment of the economy where prices and wages are 'sticky'

37. Two securities have a covariance of –40. Their standard deviations are 16% and 22%. What is the correlation coefficient between the two securities?

(a) 0.75

(b) 0.55

(c) –0.55

(d) –0.11

38. Which of the following is NOT one of Porter's Five Competitive Forces?

(a) The business cycle threat

(b) The threat of new entrants

(c) The bargaining power of suppliers

(d) The bargaining power of customers

39. Ordinary shareholders' voting rights do NOT generally allow them to:

(a) Change the firm's board of directors

(b) Demand payment of a dividend

(c) Agree that the firm should raise more ordinary share capital

(d) Influence the firm's corporate policy

40. A house is bought with a 6%, 20 year, £100,000, annual payment repayment mortgage. The annual payment is closest to:

(a) £7,940

(b) £8,112

(c) £8,718

(d) £9,114

41. An analyst wishes to determine whether a company is undervalued or overvalued relative to similar companies by using ratios. If they are concerned that the accounting practices of the firm may lead to distortion, then the ratio which would be least impacted by accounting distortion would be:

(a) Price/earnings ratio

(b) Price/book ratio

(c) Price/sales ratio

(d) Price/cash flow ratio

42. A change in method of depreciation which leads to a higher depreciation charge will:

(a) Reduce profits

(b) Increase profits

(c) Reduce net cash flow

(d) Increase net cash flow

43. A sample taken by selecting every 10th item from a list of population members is best described as being a:

(a) Stratified sample

(b) Random sample

(c) Systematic sample

(d) Decimal sample

44. The Macaulay Duration of a bond which has a modified duration of 2.4 and a yield of 14% is closest to:

(a) 2.11 years

(b) 2.34 years

(c) 2.74 years

(d) 2.89 years

45. The monthly return of an investment over the past six months is:

+0.75%; –0.02%; +1.01%; –0.15%; +1.82%; +1.74%

The geometric mean monthly return is closest to:

(a) 0.818%

(b) 0.855%

(c) 0.914%

(d) 0.932%

46. If modified duration is used to estimate the price of a bond following a change in yield, then the impact of convexity means that the estimated price will be:

(a) Lower than the actual price if yields fall, and higher than the actual price if yields rise

(b) Higher than the actual price if yields fall, and lower than the actual price if yields rise

(c) Higher than the actual price if yields fall, and higher than the actual price if yields rise

(d) Lower than the actual price if yields fall, and lower than the actual price if yields rise

47. A company has zero units of inventory on January 1st.

- **The company buys 200 units at £34 each on January 5th.**
- **The company buys a further 300 units at £38 each on January 11th.**
- **250 units are sold on January 15th.**
- **The company buys a further 100 units at £44 each on January 25th.**
- **120 units are sold on January 29th.**

What is the balance sheet value of the remaining inventory at the end of January if the company uses LIFO?

Important! You should enter the answer *only* in numbers *strictly* using this format: **0000**

Do not include spaces, letters or symbols (but decimal points and commas should be used if indicated).

48. Which of these correlation coefficients between two assets will provide the best diversification benefits?

(a) +0.9

(b) Zero

(c) –0.1

(d) –0.7

49. *Stamp duty reserve tax (SDRT) is charged at:*

(a) 0.5% on the purchase of all eligible securities

(b) 0.5% on the sale of all eligible securities

(c) 0.5% on the purchase or sale of all eligible securities

(d) £1 on all purchases of securities over £10,000

50. When looking in the notes to the financial statements, an analyst identifies a potential liability which is NOT predictable enough to have a specific provision in the accounts. This form of liability would be best described as a(n):

(a) Goodwill liability

(b) Contingent liability

(c) Reserve liability

(d) Intangible liability

51. The default category under IAS 39 for financial liabilities which do NOT meet the definition of financial liabilities at fair value through profit and loss is:

(a) Fair value through profit and loss

(b) Held to maturity

(c) Loans and receivables

(d) Measured at amortised cost

52. A two-year bond has a face value of £100, annual coupon payout of £6, price of £103.77, and is yielding a return of 4%. What is the Macaulay duration of the bond?

(a) 1.57 years

(b) 1.69 years

(c) 1.79 years

(d) 1.94 years

53. A 4% Treasury Bond has a dirty price of £104.91, 57 days after its last half-yearly coupon payment. What is the clean price (in a 365 day year)?

(a) £103.67

(b) £104.29

(c) £105.52

(d) £106.15

54. An ordinary share has just paid a dividend of £0.45. If the company is expected to grow indefinitely at 4%, and its current market value is £3.50 what is the expected return on the stock?

(a) 12.98%

(b) 14.52%

(c) 17.37%

(d) 18.13%

55. Which bias leads investors to be too slow in reacting to news about an investment?

(a) Conservatism bias

(b) Overconfidence bias

(c) Sample size neglect

(d) Memory bias

56. A fund begins Year 1 with a value of £14m. At the beginning of Year 2 a further £6m is deposited in the fund. No further deposits or withdrawals are made during the two years. If the money-weighted return on the fund over the entire two years is 12% per annum, what is the value of the fund at the end of year 2?

(a) £20.00m

(b) £21.68m

(c) £24.28m

(d) £25.08m

57. Which of the following is least accurate with regard to American Depositary Receipts (ADRs)?

(a) They represent investments in a number of non-US shares

(b) They may be traded on the NYSE

(c) They eliminate currency risk for US investors

(d) They allow non-US companies to increase exposure to US investors

58. The 'minimum efficient scale' (MES) for a firm is *best described* as the:

(a) Highest level of output where the long run average cost is at a minimum

(b) Lowest level of output where the long run average cost is at a minimum

(c) Highest level of output where the short run average cost is at a minimum

(d) Lowest level of output where the short run average cost is at a minimum

59. What is the present value of a five year annual 6% coupon bond if the discount rate is 5.5%?

(a) £100.86

(b) £101.34

(c) £102.14

(d) £102.78

60. Which of the following least well reflects an assumption of the CAPM model?

(a) Investors can borrow at a rate which is higher than their lending rate

(b) There are no taxes or transaction costs

(c) Investors all have the same expectations of risk and return

(d) Investors all try to maximise returns and minimise risk

61. The spot €/£ exchange rate is €1.27 = £1.00. One year interest rates in the Eurozone are 2%; one year interest rates in the UK are 5%. Using interest rate parity, what is the implied one year €/£ forward rate?

Important! You should enter the answer *only* in numbers *strictly* using this format: **0.00**

Do not include spaces, letters or symbols (but decimal points and commas should be used if indicated).

62. A machine has an initial cost of £650,000 with a useful life of 5 years.

If the annual straight line depreciation charge is £90,000, what is the expected scrap value of the machine?

Important! You should enter the number only in numbers strictly using this format: **000,000**

Do not include spaces, letters, or symbols (but decimal points and commas should be used only if indicated)

63. International accounting standards requires that goodwill in a business combination:

(a) Will not be recorded in the balance sheet

(b) Is recorded in the balance sheet at fair value less accumulated impairment charges

(c) Is recorded in the balance sheet at cost less accumulated impairment charges

(d) Is recorded in the balance sheet at amortised cost

64. The version of the efficient market hypothesis which states that a security's price reflects all information including insider information is the:

(a) Weak form

(b) Semi-strong form

(c) Total form

(d) Strong form

65. Which of the following is least correct regarding the nature of a normal distribution?

(a) The shape of the normal distribution is governed by two factors: mean and standard deviation

(b) The normal distribution curve is symmetrical

(c) Approximately two thirds of observations lie within two standard deviations on either side of the mean

(d) 50% of observations lie on either side of the mean

66. The technique used by managers of bond funds to ensure that the portfolio has a duration which is the same as that of the portfolio's associated liability is best described as:

(a) Cash flow matching

(b) Credit hedging

(c) Yield matching

(d) Immunisation

67. A deposit of £9,000 earns interest at a rate of 3% per annum which is reinvested annually. What is the value of the investment after 8 years (to 2 decimal places)?

Important! You should enter the answer only in numbers strictly using this format: 00,000.00

Do not include spaces, letters or symbols (but decimal points and commas should be used if indicated).'

68. Who is the legal owner of the assets held by a unit trust?

(a) The unit holders

(b) The authorised corporate director

(c) The trustees

(d) The fund manager

69. The following items are displayed in an account which reconciles operating profit and net cash flow.

	£
Operating profit	250,000
Increase in trade receivables	12,000
Decrease in trade payables	15,000
Depreciation	24,000

What is the net cash flow?

(a) £229,000

(b) £247,000

(c) £262,000

(d) £274,000

70. A company has revenue of £12m, cost of sales of £6.5m, interest expenses of £0.5m, and administration expenses of £2m.

What is the company's operating profit?

(a) £3m

(b) £3.5m

(c) £5m

(d) £5.5m

71. The short term 'Phillips curve' suggests that:

(a) Lower inflation is associated with lower unemployment

(b) Lower inflation is associated with higher unemployment

(c) Higher inflation is associated with higher unemployment

(d) There is no relationship between inflation and unemployment

72. The psychological bias that leads agents to give too much weight to recent experience when making forecasts is known as:

(a) Memory bias

(b) Overconfidence

(c) Conservatism bias

(d) Sample size neglect

73. An equity analyst considering the investment potential of Firm A has prepared the following table of information:

Variable (m=millions)	Firm A Most recent accounts
Number of shares (m)	200
Warrants outstanding (m)	-
Net income (£m)	40
Dividends paid (£m)	15
Book value of assets (£m)	300
Book value of debt (£m)	100
Equity to total assets ratio	0.67
Shareholders' funds (£m)	400

What is the dividend growth rate (expressed as a percentage) for Firm A implied by the retained earnings and return on equity ratios shown in the above table?

Important! You should enter the answer only in numbers strictly using this format: 0.00

Do not include spaces, letters or symbols (but decimal points and commas should be used if indicated).

74. A firm has revenue of £100m, operating costs of £20m, investment expenditure of £27m, pays an equity dividend of £11m, and pays taxes of £18m. What is the free cash flow to the firm?

(a) £53m

(b) £42m

(c) £35m

(d) £24m

75. With regard to the consumption function, it is most correct to say that:

(a) At zero income the level of consumption is zero

(b) The level of consumption is independent of income

(c) At zero income the level of consumption is known as autonomous consumption

(d) The level of consumption first increases then falls as income increases

76. A fund has a Jensen measure of performance of 2%, whilst the return on the fund was 12%. During the same period the return on the benchmark portfolio was 10% and the risk free rate was 3%. Assuming the CAPM is correctly specified and the fund is well diversified, what is the CAPM beta of the fund?

(a) 0.7

(b) 0.8

(c) 0.9

(d) 1.0

77. Under national income accounting, overall economic activity can be measured in which of the following ways?

(i) The value of consumer purchases

(ii) The value of output by firms

(iii) The value of expenditure by firms on inputs

(a) (i) only

(b) (ii) only

(c) (ii) and (iii) only

(d) (i), (ii) and (iii) only

78. The highest non-investment grade bond is given which credit rating by Moody's?

(a) BB+

(b) Ba1

(c) BBB-

(d) Baa3

79. Which of these forms of collective investment schemes would be best described as being closed ended?

(a) OEIC

(b) Investment trust

(c) ICVC

(d) Unit trust

80. The tracking error of a portfolio would best be described as the:

(a) Standard deviation of the difference in the portfolio and the risk-free rate

(b) Difference between the portfolio and the risk-free rate

(c) Standard deviation of the difference between the portfolio returns and the benchmark returns

(d) Standard deviation of the difference in the benchmark and the risk-free rate

81. What is the value of the rebased index in year 2 if the index in year 5 is rebased to a value of 100?

Year	1	2	3	4	5
Value of index	94	96	106	113	120

Important! You should enter the answer only in numbers strictly using this format: **00 or 000**

Do not include spaces, letters or symbols (but decimal points and commas should be used if indicated).

82. If a put option decreased in price by 10p while the underlying asset increased in price by 25p over the same period, what is the option's delta value?

(a) 0.4

(b) -0.4

(c) 2.5

(d) -2.5

83. The frequency of data in a histogram is represented by the:

(a) Height of the bars

(b) Width of the bars

(c) Number of bars

(d) Area of the bars

84. It is least likely that which of the following can be determined from the statement of changes in equity?

(a) Dividends paid during the past year

(b) Cost of goods sold during the past year

(c) Net income retained during the past year

(d) New share capital issued during the past year

85. A measure of the decline in value of an investment from its historical peak value is best described as:

(a) Value at risk

(b) Shortfall

(c) Drawdown

(d) Semi-variance

86. Companies operating in which of the following types of market would maximise their profits by producing at a quantity such that marginal revenue equals marginal cost?

(i) Perfect competition

(ii) Monopolistic competition

(iii) Pure monopoly

(a) (i) only

(b) (i) and (ii) only

(c) (ii) and (iii) only

(d) (i), (ii) and (iii)

87. An endowment fund has a value of €110 million at the start of the year. In the middle of the year the fund is worth €95 million, at this time €25 million is paid into the fund. At the end of the year the fund is worth €126 million. What is the time-weighted rate of return of the fund over the year?

(a) –9.32%

(b) –2.34%

(c) 4.50%

(d) 8.98%

88. Which of the following characteristics would result in a bond having the highest duration?

(a) Low coupon and long maturity

(b) High coupon and long maturity

(c) Low coupon and short maturity

(d) High coupon and short maturity

89. Which of these indices is constructed as an unweighted arithmetic index?

(a) S&P 500

(b) CAC 40

(c) Nikkei 225

(d) DAX

90. A 90 day Treasury Bill with a face value of £1,000 is issued for £980. What is the annualised yield?

(a) 7.76%

(b) 8.28%

(c) 9.24%

(d) 9.66%

91. Which of the following is most true for a positively skewed distribution?

(a) Mode is smaller than median which is smaller than mean

(b) Mean is smaller than median which is smaller than mode

(c) Median is smaller than mode which is smaller than mean

(d) Mode is smaller than mean which is smaller than median

92. The Rogers International Commodity Index (RICI) does NOT include which of these sub-indices?

(a) Energy

(b) Agriculture

(c) Metals

(d) Timber

93. Which of the following will NOT require an adjustment to be made when reconciling net operating profit with the net cash flow from operating activity?

(a) Increase in dividend paid

(b) Decrease in trade receivable

(c) Depreciation charge

(d) Increase in inventories

94. What is the purpose of an income statement?

(a) To summarise cash movements during the year

(b) To summarise the movements in equity accounts during the year

(c) To reconcile assets and liabilities

(d) To provide information on the performance of the business over a specified period of time

The next 4 questions are associated with the following exhibit. The material given in the exhibit will not change.

A high net worth investor is discussing the performance of his portfolio with his advisor. The advisor has collated the following data about the portfolio and the benchmark portfolio:

Exhibit 2

Return on portfolio	6%
Risk free return	2%
Portfolio standard deviation	20%
Portfolio beta (β)	1.6
Return on the benchmark portfolio	7%
Return on the market	4%

The investor also asks the investor to give him additional information about Exchange Traded Funds and REITS, both of which he is interested in adding to his portfolio.

95. Using the information in Exhibit 2 calculate the Jensen measure of the portfolio.

Important! You should enter the answer *only* in numbers *strictly* using this format: **0.0**

Do not include spaces, letters or symbols (but decimal points and commas should be used if indicated).

96. Using the information in Exhibit 2 calculate the Treynor measure of the portfolio.

Important! You should enter the answer *only* in numbers *strictly* using this format: **0.0**

Do not include spaces, letters or symbols (but decimal points and commas should be used if indicated).

97. Using the information in Exhibit 2 calculate the Sharpe measure of the portfolio.

Important! You should enter the answer *only* in numbers *strictly* using this format: **0.0**

Do not include spaces, letters or symbols (but decimal points and commas should be used if indicated).

98. If the investor wished to know the information ratio of their portfolio, what additional portfolio data would the advisor need to produce?

(a) The active error

(b) The holding period return

(c) The tracking error

(d) The time weighted rate of return

99. Which of the following is least accurate with regard to exchange traded funds (ETFs)?

(a) ETFs are traded on the London Stock Exchange

(b) ETFs must be UCITS compliant to obtain FCA recognition

(c) ETFs are passively managed

(d) ETFs trade once a day at closing market prices

100. What is the minimum amount of a REIT's net taxable profits which must be distributed to investors?

(a) 50%

(b) 75%

(c) 90%

(d) 95%

101. When price volatility increases over time, which of the following is most likely to occur:

(a) Tracking error decreases

(b) Correlations between securities decrease

(c) Effective diversification becomes easier

(d) Correlations between securities increase

102. A well diversified portfolio has a CAPM beta of 1.1 and a covariance of return with the market of 250. What is the variance of the return on the market?

(a) 198.8

(b) 206.6

(c) 215.9

(d) 227.3

103. Which of the following is considered a hard commodity?

(a) Wheat

(b) Pork Bellies

(c) Aluminium

(d) Coffee

104. In a private equity partnership, which of the following terms best describes the investment managers?

(a) Equal partners

(b) Limited partners

(c) General partners

(d) Senior partners

105. Which of the following is NOT a criteria that a benchmark needs to satisfy in order to be a meaningful performance tool?

(a) Responsible

(b) Measurable

(c) Specified in advance

(d) Investable

Answers

1	b	2	b	3	d	4	b	5	34.49
6	c	7	c	8	a	9	d	10	d
11	c	12	b	13	a	14	b	15	d
16	c	17	a	18	900	19	b	20	c
21	c	22	b	23	c	24	£0	25	a
26	b	27	c	28	b	29	b	30	b
31	a	32	0.9	33	d	34	a	35	b
36	d	37	d	38	a	39	b	40	c
41	d	42	a	43	c	44	c	45	b
46	d	47	7940	48	d	49	a	50	b
51	d	52	d	53	b	54	c	55	a
56	c	57	c	58	b	59	c	60	a
61	1.23	62	200,000	63	c	64	d	65	c
66	d	67	11,400.93	68	c	69	b	70	b
71	b	72	a	73	6.25%	74	c	75	c
76	d	77	d	78	b	79	b	80	c
81	80	82	b	83	d	84	b	85	c
86	d	87	a	88	a	89	c	90	b
91	a	92	d	93	a	94	d	95	0.8
96	2.5	97	0.2	98	c	99	d	100	c
101	d	102	d	103	c	104	c	105	a

*Further breakdown of calculations below

Q1. (b)
Price of a warrant = (Value of equivalent American call option × Number of shares created by warrant) / (Number of shares in issue if all warrants exercised / Number of current shares)
Value of American Call option = £2.40
Number of shares created by each warrant = 3
Number of current shares = 1,000,000
Number of shares if all warrants exercised = 1,000,000 + (50,000 × 3) = 1,150,000
Therefore, warrant price = (£2.40 × 3) / (1,150,000 / 1,000,000) = £7.20 / 1.15 = £6.26

Q2. (b)
Before scrip dividend, 10 shares have a value of 10 × £5.00 = £50.00
Scrip dividends do not alter overall market capitalisation of company. Therefore, after the scrip dividend of one share for every 10 previously held, 11 shares now equal £50.00.
Thus, ex-scrip price = £50 / 11 = £4.55 (closest answer is (b) £4.54)

Q4. (b)
Present value of a zero coupon bond with 5 years to maturity = Par Value / (1 + internal rate of return)^5
IRR = (Par Value / Price)$^{(1/5)}$ – 1
IRR = (£1,000 / £883.85)$^{0.2}$ – 1 = 0.025 or 2.5%

Q5.
Interest charged monthly needs to be compounded 12 times in order to arrive at the annual rate.
Therefore, (1 + 0.025)^{12} – 1 = 0.3449 or 34.49%

Q7. (c)
Each FTSE 100 future has a value of £10 per point, i.e. the December futures have a notional value of 6,500 × £10 = £65,000.
Number of futures contracts required = (value of fund × CAPM beta) / notional futures value
Therefore, (£120,000,000 × 1.10) / £65,000 = 2030.8, i.e. 2031 contracts (after rounding to nearest integer)

Q8. (a)
Price elasticity of demand (PED) = (change in quantity demanded) / (change in price)
PED = 8% / -4% = -2

Q9. (d)
Price of bond if required rate is 3.5%:
(£5 / (1 + 0.035)) + (£105 / (1 + 0.035)^2) = £4.83 + £98.02 = £102.85
If coupon rate is equal to required rate then the price of the bond is the par value. This is the case if the required return is 5%, hence the price is £100.00.
Difference = £100.00 – £102.85 = -£2.85

Q12. (b)
Goodwill = Acquisition price – assets net of liabilities
Goodwill = £1,500,000 – (£400,000 + £50,000 + £600,000) = £450,000

Q15. (d)
Holding Period Return (HPR) = ((Final Price + Dividends) / (Initial Price)) – 1
HPR = ((475 + 30) / 450) - 1 = 0.1222 or 12.22%

Q17. (a)
Multiplier = 1 / (1 – (c – e)), where c is the marginal propensity to consume and e is the marginal propensity to import
Multiplier = 1 / (1 – (0.6 – 0.3) = 1.43

Q18.
Dividend Cover = Earnings Per Share / Dividend Per Share
Therefore, EPS = 3 × 20p = 60 pence
Price = Price-Earnings ratio × EPS = 15 × 60 = 900

Q21. (c)
Assuming purchasing power parity, $F / E = (1 + i_x) / (1 + i_y)$, where F is the forward rate, E is the spot rate, i_x is the Islandia forecast inflation rate and i_y is the US forecast inflation rate.
Therefore, $F = 0.89 \times (1 + 0.0225) / (1 + 0.0125) = 0.90$
Quoted forward rate is currently 0.91, hence it undervalues the Islandia currency by 0.01 relative to the PPP rate.

Q24.
Using interest rate parity, $(F / E) = (1 + R_x) / (1 + R_y)$, where F is the forward rate, E is the spot rate, R_x is the Islandia interest rate and R_y is the US interest rate.
Therefore, $F = 0.89 \times (1 + 0.0150) / (1 + 0.0125) = 0.8922$
Difference = 0.9100 – 0.8922 = 0.0178

Q27. (c)
Value = initial amount × $e^{\text{interest rate} \times \text{number of years}}$
Value = £100,000 × $e^{0.02 \times 10}$ = £122,140

Q28. (b)
After 5 years the machine is worth £50,000 / £300,000 = 0.1667 of its original value.
Annual depreciation rate is thus $0.1667^{(1/5)} = 0.6988$
After one year the value of the machine is £300,000 × 0.6988 = £209,640
Depreciation charge in year 2 is thus = £209,640 × (1 – 0.6988) = £63,144

Q32.
Order the returns according to size:
–3.1%, –2.2%, –1.4%,0.2%, 0.4%, 0.8%, 1.0%,1.1%,1.4%,2.4%,2.5%,3.0%
The median is the average of the 6th and 7th values.
Median = (0.8% + 1.0%) / 2 = 0.9%

Q37. (d)
The correlation coefficient (CC) is the covariance of two securities divided by the product of their respective variances.
CC = –40 / (16 × 22) = -0.11

Q40. (c)
$D_T = D_0 (1 + r)^T + (d(1 + r)^T – d) / r$
Where, D_T = the final sum (zero in the case of a repayment mortgage), D_0 is the initial sum borrowed (a negative value as the mortgage is a loan), r is the rate of interest charged, T is the number of years of the mortgage and d is the annual repayment amount.
Rearranging terms gives,
$D_T – D_0 (1 + r)^T = (d(1 + r)^T – d) / r$
We know $D_T = 0$, thus,
$–D_0 (1 + r)^T = (d(1 + r)^T – d) / r$
$–D_0 r (1 + r)^T = d(1 + r)^T – d$
$–D_0 r (1 + r)^T = d((1 + r)^T – 1)$
Hence,
$d = (–D_0 r (1 + r)^T) / ((1 + r)^T – 1)$
$d = (£100,000 \times 0.06 \times (1 + 0.06)^{20}) / ((1 + 0.06)^{20} – 1)$
d = £19,242.81 / 2.2071 = £8,719 (closest to (c) £8,718)

Q44. (c)
Modified Duration = Macaulay Duration / (1 + interest rate)
Macaulay Duration = 2.4 × (1 + 0.14) = 2.74

Q45. (b)
The geometric mean (GM) of a series is the product of the values to the power of the reciprocal of the number of values.
$GM = (1.0075 \times 0.9998 \times 1.0101 \times 0.9985 \times 1.0182 \times 1.0174)^{1/6} = 1.00855$ or 0.855%

Q52. (d)
Macaulay Duration (MD) = $((PV_1 \times 1) + (PV_2 \times 2)) / (PV_1 + PV_2)$, where PV is present value.

PV_1 = £6 / 1.04 = £5.77
PV_2 = £106 / 1.04^2 = £98.00
MD = ((£5.77 × 1) + (£98.00 × 2)) / (£5.77 + £98.00) = 1.94

Q53. (b)
Interest is paid semi-annually, thus first calculate the proportion of semi-annual period elapsed since last payment, i.e. 57 / 182.5 = 0.3123
The 4% coupon is paid semi-annually and the Treasury has a par value of £100 hence the semi-annual coupon has a value of £100 × 0.04 / 2 = £2.00
The interest accrued since the last payment is thus 0.3123 × £2.00 = £0.62
Dirty price = Clean Price + Accrued Interest
Clean Price = £104.91 - £0.62 = £104.29

Q54. (c)
Using Gordon's growth model,
Price = Dividend next year / (expected return – growth rate)
Expected return = (Dividend next year / Price) + growth rate
ER = (£0.45 × (1 + 0.04) / £3.50) + 0.04 = 0.1737 or 17.37%

Q56. (c)
Initial deposit after two years = £14m × 1.12^2 = £17.56m
Second deposit only invested for one year = £6m × 1.12 = £6.72m
Total value = £17.56m + £6.72m = £24.28m

Q59. (c)
PV = (£6 / 1.055) + (£6 / 1.055^2) + (£6 / 1.055^3) + (£6 / 1.055^4) + (£106 / 1.055^5)
PV = £5.687 + £5.391 + £5.110 + £4.843 + £81.104 = £102.14

Q61.
Using interest rate parity, (F / E) = (1 + R_x) / (1 + R_y), where F is the forward rate, E is the spot rate, R_x is the Eurozone interest rate and R_y is the UK interest rate.
Therefore, F = 1.27 × (1 + 0.02) / (1 + 0.05) = 1.23

Q62.
Straight line depreciation = £90,000 per year × 5 years = £450,000
Scrap value = £650,000 - £450,000 = £200,000

Q67.
Value of investment = £9,000 × 1.03^8 = £11,400.93

Q69. (b)
Net Cash Flow (NCF) = Operating Profit – Increase in Trade Receivables – Decrease in Trade Payables + Depreciation
NCF = £250,000 - £12,000 - £15,000 + £24,000 = £247,000

Q70. (b)
Operating Profit (OP) = Revenue – Cost of Sales – Administration Expenses
OP = £12m – £6.5m – £2m = £3.5m

Q73.
Return on Equity = Net Income / Shareholders' funds = £40m / £400m = 0.1
Retained Earnings = Net Income – Dividends Paid = £40m - £15m = £25m
Proportion of Retained Earnings = £25m / £40m = 0.625
Dividend Growth Rate (DGR) = Proportion of Retained Earnings × Return on Equity
DGR = 0.625 × 0.1 = 0.0625 or 6.25%

Q74. (c)
Free Cash Flow (FCF) = Revenues – Operating Costs – Taxes – Investment Expenditure
FCF = £100m – £20m – £27m – £18m = £35m

Q76. (d)

Jensen Measure = Fund Return – (Risk Free Rate + Beta × (Market Return – Risk Free Rate))
Beta = (Fund Return – Jensen Measure – Risk Free Rate) / (Market Return – Risk Free Rate)
Beta = (12% – 2% – 3%) / (10% – 3%) = 1.0

Q81.
New Period 2 value = (New Period 5 value / Old Period 5 value) × Old Period 2 value
New Period 1 value = (100 / 120) × 96 = 80

Q82. (b)
Delta = Change in Option Price / Change in Underlying
Delta = -10p / 25p = -0.4

Q87. (a)
Return in first half of year = €95m / €110m = 0.8636
Return in second half of year = €126m / (€95m + €25m) = 1.0500
Time Weighted Return = 0.8636 × 1.0500 = 0.9068 or -9.32%

Q90. (b)
Percentage gain if bill held to maturity = (£1000 - £980) / £980 = 0.02041 or 2.041%
Bill was only held for 90 days so annualized value (assuming a 365-day year) is given by:
(365 / 90) × 2.041% = 8.28%

Q95.
Jensen Measure (JM) = Fund Return – (Risk Free Rate + Beta × (Market Return – Risk Free Rate))
JM = 6% – (2% + 1.6 × (4% – 2%)) = 0.8

Q96.
Treynor Measure (TM) = (Fund return – Risk Free Rate) / Beta
TM = (6% – 2%) / 1.6 = 2.5

Q97.
Sharpe Ratio (SR) = (Fund Return – Risk Free Rate) / Standard Deviation
SR = (6% – 2%) / 20% = 0.2

Q102. (d)
CAPM beta = Covariance / Variance of Market
Therefore, Variance = 250 / 1.1 = 227.3