INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

11 April 2023 (am)

Subject CB2 – Business Economics
Core Principles

Time allowed: Three hours and twenty minutes

In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator.

If you encounter any issues during the examination please contact the Assessment Team on T. 0044 (0) 1865 268 873.

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1 In economics, the problem of scarcity:

A exists only in economies that are at full employment.
B can be eliminated if prices are allowed to rise or fall so as to keep supply equal to demand.
C means that there are shortages of some goods due to demand being greater than supply.
D exists because there are insufficient resources to satisfy human wants.

[1½]

2 What is the combined effect of a fall in the cost of production and a fall in consumer income on the equilibrium price and quantity of a normal good?

A The effect on price is indeterminate but quantity will fall.
B The effect on price is indeterminate but quantity will rise.
C The effect on quantity is indeterminate but price will fall.
D The effect on quantity is indeterminate but price will rise.

[1½]

3 Economies of scale means:

A long-run total cost rises as output rises.
B long-run average total cost falls as output rises.
C short-run average total cost falls as output rises.
D short-run average total cost rises as output rises.

[1½]

4 Which of the following does NOT necessarily apply to a perfectly competitive firm that produces in both the short run and the long run?

A The firm will equate its marginal costs to its average revenue.
B The firm will equate its marginal costs to its marginal revenue.
C The firm will have an average revenue that exceeds its average variable costs of production.
D The firm will make only normal profits.

[1½]

5 The prisoner's dilemma, applied to a situation involving two oligopolistic firms, illustrates that:

A each firm will NOT take account of its rival's reactions when making its pricing decision.
B the price set by one firm will NOT influence the price set by the other firm.
C in avoiding the worst possible outcome, each of the firms will fail to reach the best possible outcome.
D in avoiding the worst possible outcome, each of the firms will succeed in reaching the best possible outcome.

[1½]

6 The welfare consequences of third-degree price discrimination are to the benefit of:

A the consumers of the good at the expense of the producers.
B the producers of the good at the expense of the consumers.
C both the consumers and producers.
D neither the producers nor the consumers.

[1½]

7 The demand for Good X has a price elasticity of –1. Tax on Good X is £10 per unit. If the government decides to reduce the tax on Good X to £5 per unit, this would shift the supply curve for Good X down by:

A less than £5 and decrease the price by less than £5.
B less than £5 and decrease the price by more than £5.
C £5 exactly and decrease the price by £5 exactly.
D £5 exactly and decrease the price by less than £5.

[1½]

8 An economy moves from producing 15 units of Good X and six units of Good Y to instead producing 16 units of Good X and three units of Good Y. How many units of Good Y is the opportunity cost of the 16th unit of Good X?

A 1/3
B 2
C 3
D 5.

[1½]

9 Which of the following best describes an annual demand curve?

A The quantity consumers would like to buy annually.
B The quantity consumers are willing and able to buy at each level of income over the next year.
C The quantity consumers are willing and able to buy annually at each price.
D The quantity consumers are willing and able to buy over the next year.

[1½]

10 If a maximum price for Good X is fixed above the market equilibrium price, there will be:

A no tendency for the market price of Good X to change.
B an excess demand for Good X.
C an excess supply of Good X.
D an upward pressure on the price of Good X.

[1½]

11 A firm's short-run total costs are £250 when ten units are produced and its total variable costs are £100. The marginal cost of producing the tenth unit is £27 and the marginal cost of producing the eleventh unit is £23. Which of the following is TRUE?

A The average total cost of the eleventh unit is greater than the average total cost of the tenth unit.
B The total fixed costs for eleven units are £177.
C The average fixed cost for eleven units is greater than the marginal cost for the eleventh unit.
D The average variable cost of production for the eleventh unit is less than the marginal cost of production for the eleventh unit.

[1½]

12 In a duopoly industry, the profit payoffs to Firm X arising from various strategies will depend on Firm Y's strategy. The profit payoffs to Firm X are given below:

		Firm Y's possible strategy			
		5	*6*	*7*	*8*
Strategy of Firm X	1	90	40	–10	100
	2	40	70	–20	–80
	3	25	50	120	130
	4	10	40	70	60

Which one of the following represents the maximin strategy of Firm X?

A Strategy 1
B Strategy 2
C Strategy 3
D Strategy 4.

[1½]

13 Global Airways, which is a profit-maximising firm, has to decide whether or not to run an extra daily flight between London and Manchester. The total daily fixed costs of the airline are £4,000, the total variable costs of the extra flight are £4,500 and the expected average revenue from the extra flight is £50 with 85 passengers. In such circumstances, Global Airways will:

A not run the extra flight because it will expect profits to decrease (or losses increase) by £250.
B not run the extra flight because its expected profit of £250 is insufficient to cover its fixed costs.
C run the extra flight because that will increase profits (or reduce losses) by £250.
D run the extra flight because the expected revenue of £4,750 is more than its fixed costs.

[1½]

14 Good X is an inferior good (but not a Giffen good). If a budget line is drawn with quantity of Good Y on the vertical axis and quantity of Good X on the horizontal axis, a fall in price of Good X will cause the budget line of the consumer to:

A shift to the right and the overall consumption of Good X to fall.
B become flatter and the overall consumption of Good X to rise.
C shift to the right and the overall consumption of Good X to rise.
D become steeper and the overall consumption of Good X to fall.

[1½]

15 Which of the following could explain why a country's aggregate demand curve may shift inwards to the left?

A A decrease in interest rates
B An appreciation of the domestic currency
C A rise in government expenditure
D An increase in business confidence.

[1½]

16 Which of the following statements about real variables in the economy is TRUE?

A If nominal Gross Domestic Product (GDP) rises by 3%, then the real GDP must have risen.
B The nominal GDP must change by a bigger percentage than the real GDP if there is positive rise in the GDP deflator.
C An increase in real income will lead to a fall in the demand for real money balances.
D Real interest rates can be negative even if both the nominal interest rate and expected inflation rate are positive.

[1½]

17 In an economy operating significantly below the full employment level of output, the adoption of an expansionary fiscal policy combined with a contractionary monetary policy will result in:

A a rise in aggregate demand and a rise in unemployment.
B a rise in aggregate demand and a fall in unemployment.
C a fall in aggregate demand and a rise in unemployment.
D an indeterminate effect on aggregate demand and unemployment.

[1½]

18 Which one of the following would NOT constitute a supply-side economic policy for reducing unemployment?

A Reducing social security benefits
B Increasing the money supply
C Reducing corporate and personal taxation
D Increased government expenditure on education and training.

[1½]

19 In a simple closed economy with no taxes, consumption is given by the relationship:

$$C = £50 \text{ million} + 0.6\,Y$$

where C is consumption expenditure and Y is GDP.

If government expenditure is £100 million and investment is £50 million, what will be the equilibrium value of GDP of the economy?

A £200 million
B £600 million
C £1,000 million
D None of the above.

[1½]

20 Which one of the following is most likely to lead to cost-push inflation?

A An increase in trade union powers
B An appreciation of the domestic currency's exchange rate
C A rise in labour productivity
D A decrease in the profit margins applied by firms.

[1½]

21 Other things remaining the same, in a closed economy, the effect of a cut in government expenditure is to:

A lower short-term interest rates because the aggregate demand curve shifts to the left.
B raise short-term interest rates because the aggregate demand shifts to the left.
C lower short-term interest rates because the aggregate demand curve shifts to the right.
D raise short-term interest rates because the aggregate demand curve shifts to the right.

[1½]

22 Assume that the actual rate of unemployment is below the natural rate of unemployment because the expected rate of inflation is below the actual rate of inflation. If the expected rate of inflation rises to equal the actual rate of inflation, then real wage growth will start to:

A fall, and real output will rise.
B fall, and real output will fall.
C rise, and real output will rise.
D rise, and real output will fall.

[1½]

23 Which of the following is the correct response for the missing words, (i) and (ii), in the statement below?

Automatic stabilisers act to ___(i) ___ government expenditures and ___(ii)___ government revenues during a recession.

A (i) increase, (ii) decrease
B (i) increase, (ii) increase
C (i) decrease, (ii) increase
D (i) decrease, (ii) decrease.

[1½]

24 In a closed economy, planned investment is £20 million, government expenditure is £40 million, planned savings are £15 million and taxes are £25 million. Which of the following is most likely to occur?

A National income will tend to increase.
B National income will tend to decrease.
C Unemployment and production will tend to fall.
D The general level of prices will tend to fall.

[1½]

25 According to the quantity theory of money, an increase in the money supply is least likely to lead to inflation if the:

A velocity of circulation increases.
B real national income decreases.
C velocity of circulation is constant and the real national income increases.
D velocity of circulation and the real national income are constant.

[1½]

26 Other things being equal in an economy with zero economic growth, if the expected rate of inflation on which wage settlements are based is 3% p.a. and the money supply is increasing at 4% p.a., then there will be a short-run:

A fall in inflation and fall in unemployment.
B rise in inflation and fall in unemployment.
C fall in inflation and rise in unemployment.
D rise in inflation and rise in unemployment.

[1½]

27 You are given the following data concerning the average product of labour, which, along with five units of capital, are the only two factors of production used in the short-run production process:

Units of labour employed	*Average product of labour (in units of output)*
0	–
1	30
2	35
3	40
4	45
5	50
6	45
7	35

Each unit of capital costs £300 and each unit of labour costs £100.

(i) Calculate the marginal product of the fifth unit of labour. [1]

(ii) State whether the marginal product of the sixth unit of labour is greater or less than that of the third unit of labour. [1]

(iii) Calculate the average cost of production, if four units of labour are employed in the short run. [1]

(iv) Calculate the total cost of production when output is 270 units. [1]

(v) Determine how many units of labour the firm should employ if the good being produced can be sold at £40 per unit, regardless of the quantity sold. [1]

[Total 5]

28 A consumer spends all of their money on two Goods, X and Y, and is currently maximising utility. Good Y is a normal good, while Good X is an inferior (but not Giffen) good. Use this initial equilibrium as your starting position in each case when answering parts (i) to (iii). In each part, explain your answer with reference to any income and substitution effects applicable.

(i) Explain the effect on the consumer's consumption of both Good X and Good Y, if the consumer's income increases. [2]

(ii) Explain the effect on the consumer's consumption of Good X if Good X falls in price. [2]

(iii) Describe the impact on the consumer's consumption of Good X if both Good X and Good Y rise in price by the same percentage. [2]

[Total 6]

29 Explain the difference between the law of diminishing returns and diseconomies of scale in relation to the costs of production of a firm producing a good where the two factors of production are capital and labour. [5]

30 The household water supply market is typically characterised by a monopoly supplier. Explain the reasons for this and discuss what measures governments can take to ensure that consumers are not excessively overcharged. [5]

31 (i) A landlord is considering renting a property to a new tenant. Explain the problem of information asymmetry from the landlord's perspective, indicating the measures the landlord can undertake to mitigate the problem. [3]

(ii) Explain the likely effects on producer surplus of a rent control law that sets rents chargeable to below the free market rent. Comment on how this impact will depend on the price elasticity of supply for rental properties. [2]

[Total 5]

32 A country with a fixed but adjustable exchange rate needs to reduce its trade deficit but has ruled out the use of either import quota or tariffs. Discuss the relative merits of various other measures the country's government could take to reduce its trade deficit. [5]

33 You are given the following data for an economy:

	Year 2020 (£ millions)
Consumer expenditure (excluding indirect taxes)	140
Investment	60
Government expenditure (including transfer payments)	70
Exports	40
Imports	30
Net income from abroad	20
Indirect taxes	15
Capital depreciation	20
Transfer payments	10

(i) Calculate the GDP at market prices. [1]

(ii) Calculate the gross national income at basic prices. [1]

(iii) Calculate the net national income at market prices. [1]

(iv) Explain under what circumstances a 4% rise in the nominal GDP may be accompanied by a fall of 2% in the real GDP. [1]

(v) Explain whether a car that is produced during 2020 but is not sold will be included in the GDP figures for 2020. [1]

[Total 5]

34 Explain how, in an open economy, an expansionary monetary policy is likely to impact on the various components that make aggregate demand in the short run. [5]

35 (i) Explain the difference between the Bertrand model of oligopoly and the Cournot model of oligopoly. Explain which model can best explain 'price wars' that occasionally take place between supermarkets. [5]

(ii) Explain, with the aid of a numerical example, how game theory can result in two firms acting in isolation, both setting high outputs that are not in their mutual interests. Your answer should indicate how both firms agreeing to lower output can lead to higher joint profits. [5]

[Total 10]

36 (i) Explain, with reference to the distinction between anticipated and unanticipated inflation, the reasons why economic policy makers are concerned about the effects of unanticipated inflation. [5]

(ii) Discuss how both fiscal and monetary policy can be used to control inflation and comment on any adverse implications for the broader economy of bringing inflation under control. [5]

[Total 10]

END OF PAPER