

INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

1 October 2012 (am)

Subject CT7 – Business Economics Core Technical

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *Enter all the candidate and examination details as requested on the front of your answer booklet.*
2. *You must not start writing your answers in the booklet until instructed to do so by the supervisor.*
3. *Mark allocations are shown in brackets.*
4. *Attempt all 38 questions. From question 27 onwards begin each answer on a separate sheet.*
5. *Candidates should show calculations where this is appropriate.*

Graph paper is NOT required for this paper.

AT THE END OF THE EXAMINATION

Hand in BOTH your answer booklet, with any additional sheets firmly attached, and this question paper.

<p><i>In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator from the approved list.</i></p>
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- 1** Which of the following will result from the imposition of a 9 per cent sales tax on household fuel, the demand for which has an absolute price elasticity of demand equal to 1.5?
- A A rise in the price of fuel by 10.5 per cent.
 - B A rise in the price of fuel by 9 per cent.
 - C A rise in the price of fuel by 12 per cent.
 - D A rise in the price of fuel by less than 9 per cent.

[1½]

- 2** A minimum price is set for Good X at £10 which happens to coincide with the free market price. An increase in the demand for Good X keeping the minimum price fixed at £10 will lead to:
- A no change in price and a shortage.
 - B a rise in price and quantity sold.
 - C a rise in price and a shortage.
 - D a rise in price and a surplus.

[1½]

- 3** Which of the following statements about short run costs of production is incorrect?
- A Marginal cost is equal to average variable cost when average variable cost is at a minimum.
 - B Average fixed cost always falls as output rises.
 - C Marginal cost cannot exceed average total cost.
 - D Average total cost exceeds average variable cost by an amount that declines with increasing output.

[1½]

- 4** Which of the following is NOT a feature of an industry characterised by monopolistic competition?
- A There are many firms.
 - B Firms sell differentiated products.
 - C In the long run monopolistic powers enable firms to make excess profits.
 - D A firm can raise its price without losing all its customers.

[1½]

- 5** A profit maximising monopolist with positive marginal costs and a downward sloping demand curve will be able to make most profit if the demand curve is:
- A price inelastic.
 - B price elastic.
 - C of unit price elasticity.
 - D of infinite price elasticity.

[1½]

- 6** The following data is for a perfectly competitive firm producing Good X in the short run:

<i>Number of machines</i>	<i>Number of men</i>	<i>Total Output of Good X</i>
5	7	100
5	8	140
5	9	170
5	10	190

Which one of the following statements is correct?

- A The marginal physical product of the 8th man is lower than the marginal physical product of the 10th man.
- B The marginal physical product of the 8th man is higher than the marginal physical product of the 9th man.
- C The marginal physical product of the 9th man is lower than that of the 10th man.
- D The marginal physical product of the 10th man is negative.

[1½]

- 7** In the long run, a firm operating under conditions of monopolistic competition will produce at an output at which:

- A average total cost equals average revenue.
- B average total cost is less than average revenue.
- C average total cost is at a minimum.
- D marginal cost is equal to average total cost.

[1½]

- 8** Which one of the following is TRUE?
- A The long run average total cost curve is derived by joining all the minimum points of the short run average total cost curves.
 - B The minimum efficient scale is the point at which long run average costs must begin to fall.
 - C In the long run a firm cannot alter its fixed costs of production.
 - D If a firm trebles all its inputs and its output doubles then this is indicative of diseconomies of scale.

[1½]

- 9** Total costs of production for a firm producing 100 units of output are \$5,000 and fixed costs are \$2,000. If output is increased by 1 unit in the short run, the total costs of production are \$5,030. Which one of the following statements is TRUE with respect to the extra unit of output?

- A The marginal cost of production is less than the average fixed cost of production.
- B The average cost of production is rising.
- C The average fixed cost of production is rising.
- D The average cost of production exceeds the marginal cost of production.

[1½]

- 10** The idea that an oligopolistic firm faces a kinked demand curve is based upon the assumption that:

- A a firm's competitors match both its price increases and price decreases.
- B one firm in the industry sets the price for all other firms.
- C a firm's competitors match its price decreases but ignore its price increases.
- D prices can either rise or fall; it depends on what happens to a firm's competitors' prices.

[1½]

- 11** First degree price discrimination refers to the situation where:
- A a firm charges customers different prices according to how much they purchase.
 - B consumers are grouped into independent markets and a separate price is charged in each market.
 - C a firm charges each customer the maximum price he/she is prepared to pay.
 - D different firms charge different prices for the same product.
- [1½]

- 12** The profit payoffs to Firm X from various strategies 1 to 4 and the presumed responses of the other firm in a duopoly industry is given below:

		<i>Other Firm's Response</i>			
		<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
<i>Strategy of Firm X</i>	<i>1</i>	90	15	90	100
	<i>2</i>	40	70	−20	−80
	<i>3</i>	25	50	120	130
	<i>4</i>	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** Given the following labour hours to produce 1 unit of Goods X and Y, which of the statements below is TRUE?

<i>Country</i>	<i>Good X</i>	<i>Good Y</i>
A	10	5
B	5	20

- A Country A has a comparative advantage and an absolute advantage in producing Good Y.
- B Country B has a comparative advantage in producing Good X and an absolute advantage in producing Good Y.
- C Country A has a comparative advantage in producing Good Y and an absolute advantage in producing Good X.
- D Country B has a comparative advantage in producing Good Y and an absolute advantage in producing Good X.

[1½]

- 14** In an open economy with no taxation, the marginal propensity to save is 0.25 and the level of income is €800m. What is the likely level of consumption expenditure resulting from a rise in government expenditure of €100 million?

- A €700 million
- B €800 million
- C €900 million
- D €1000 million

[1½]

- 15** The accelerator principle states that:

- A investment is increased when interest rates fall.
- B an increase in consumer demand leads to a more than proportionate increase in the level of investment.
- C an increase in investment will lead to a more than proportionate increase in output.
- D the rate of change of investment affects the rate of change of output.

[1½]

- 16** If a country has a negative net income from abroad then:
- A Gross Domestic Product is greater than Gross National Income.
 - B Gross Domestic Product is less than Gross National Income.
 - C Gross Domestic Product is the same as Gross National Income.
 - D We cannot say whether Gross Domestic Product differs from Gross National Income from this information.
- [1½]
- 17** If the money supply decreases due to a contractionary open market operation by the central bank then the price of treasury bills will:
- A fall as the short term interest rate rises.
 - B fall as the short term interest rate falls.
 - C rise as the short term interest rate rises.
 - D rise as the short term interest rate falls.
- [1½]
- 18** Which of the following will increase the size of the multiplier?
- A An increase in Government expenditure.
 - B A decrease in the marginal propensity to save.
 - C An increase in the marginal propensity to save.
 - D An increase in autonomous investment.
- [1½]
- 19** In a closed economy with no government sector if the amount people plan to save exceeds the amount they plan to invest then there will be:
- A a rise in national income.
 - B an unplanned rise in stocks.
 - C inflationary pressures.
 - D a rise in the amount people plan to invest.
- [1½]

- 20** According to Keynesian analysis, the adoption of an expansionary fiscal policy will result in:
- A an increase in aggregate demand and a reduction in real output and unemployment.
 - B an increase in aggregate demand, real output and unemployment.
 - C an increase in aggregate demand and real output and a reduction in unemployment.
 - D a reduction in aggregate demand and real output and an increase in unemployment.
- [1½]
- 21** Which of the following is best suited to reducing the level of structural unemployment?
- A Lowering the rate of interest.
 - B Raising the rate of unemployment benefit.
 - C Higher voluntary redundancy payments for workers in declining industries.
 - D More government funds for retraining of the unemployed.
- [1½]
- 22** According to Keynesian analysis, the adoption of a policy to reduce the government's budget deficit will involve:
- A an increase in aggregate demand and a reduction in real output.
 - B an increase in aggregate demand and an increase in real output.
 - C a reduction in aggregate demand and a reduction in real output.
 - D a reduction in aggregate demand and an increase in real output.
- [1½]
- 23** The quantity theory of money in its simplest form assumes that the:
- A velocity of circulation and nominal output are both fixed.
 - B ratio of the velocity of circulation to the price level is fixed.
 - C ratio of the money supply to the velocity of circulation is fixed.
 - D velocity of circulation and real output are both fixed.
- [1½]

24 Country A exports Good X and imports Good Y from Country B. The price of Good X rises by 20 per cent and the price of Good Y falls by 40 per cent. Which of the following statements is correct about Country A's terms of trade?

- A It has improved by 100 per cent.
- B It has improved by 60 per cent.
- C It has deteriorated by 100 per cent.
- D It has deteriorated by 60 per cent.

[1½]

25 Which of the following would NOT be included in the current account of a country's balance of payments?

- A Migrant remittances
- B Interest, profits and dividends paid to the rest of the world.
- C Exports of services
- D The purchase of foreign shares by a domestic pension fund.

[1½]

26 The law of comparative advantage states that countries should specialise in producing and exporting the goods that they produce at a lower:

- A marginal cost than other countries.
- B labour cost than other countries.
- C absolute cost than other countries.
- D opportunity cost than other countries.

[1½]

27 A manufacturer of Good X can sell all of Good X produced at the market price of ¥50 per unit.

When the firm is operating efficiently, the total cost of production per day is as follows:

<i>Output per day</i>	<i>Total Cost (¥)</i>
0	50
1	60
2	78
3	105
4	140
5	185
6	264

- (i) Construct a table which gives marginal cost and average total cost at each level of output. [2]
- (ii) State the level of output at which profit will be maximised. [1]
- (iii) State the level of maximum profit at the profit maximising output. [1]

[Total 4]

- 28** Outline the major factors which explain the shape of a firm's average cost curve in the short and the long run. [4]
- 29** Read both parts (i) and (ii) before answering the question.
- (i) Draw a diagram for a profit maximising monopoly making excess profits using the following labels: AC1 for the average cost curve, MC1 for the marginal cost curve, MR1 for the marginal revenue line, AR1 for the average revenue line. Show on the average revenue line a point A at which profits will be maximised and the corresponding profit maximising price (P1) and output (Q1). [2]
- (ii) Show on the average revenue line a point N at which only normal profits will be made and the corresponding price (P2) and output (Q2). [2]
- [Total 4]
- 30** Outline with the use of a diagram why essentials, such as water, have such low prices, whilst luxuries, such as diamonds, have relatively high prices. [4]
- 31** The market demand curve (Q_d) and supply curve (Q_s) of Good X are given by the following equations:
- $$Q_d = 120 - 2P$$
- $$Q_s = 2P$$
- where P is the price in pounds.
- (i) Calculate the market equilibrium price and quantity. [2]
- (ii) Calculate the market equilibrium price and quantity if a sales tax of £10 per unit is imposed on Good X. [2]
- (iii) Calculate the total tax revenue raised by the sales tax. [1]
- [Total 5]
- 32** Explain four methods by which a country can reduce its trade deficit without resorting to the use of quotas and tariffs. [4]

33 The following data refers to a simple closed economy.

Money Supply	= 200
Price Index	= 10
Real Output (i.e. Real Income)	= 100 units
Bank multiplier	= 20%

Use the equation of exchange to determine the following with the above figures as your starting point in each of your calculations:

- (i) the numerical value of the velocity of circulation. [1]
- (ii) the value of the price index if the money supply were to increase to 300. [1]
- (iii) the likely change in the money supply if there is an initial increase in bank deposits of 15. [1]
[Total 3]

- 34**
- (i) Draw a diagram representing equilibrium in the money market showing both the real money supply (MS1) and real money demand (MD1) at an interest rate r_1 that clears the money market. [2]
 - (ii) Explain and show on your diagram how a reduction in the real money supply to MS2 would affect the market rate of interest in the short run. [2]
[Total 4]

- 35**
- (i) Explain what is meant by economic growth. [1]
 - (ii) Discuss THREE factors which influence a developed country's economic growth. [3]
[Total 4]

36 The following data relates to a closed economy with no government sector:

<i>Income level</i> <i>Y</i>	<i>Planned</i> <i>Consumption</i> <i>C</i>	<i>Planned</i> <i>Investment</i> <i>I</i>
80	64	22
100	78	22
120	92	22
140	106	22

where:

- $C = 8 + 0.7Y$.
 - planned consumption is the amount of consumption expenditure households plan to undertake.
 - planned investment is the amount of investment firms plan to carry out.
 - planned savings is the amount that households plan to save.
- (i) Determine the equilibrium level of national income. [1]
 - (ii) If the national income were £140 million calculate the rise or fall in unplanned stocks. [1]
 - (iii) Determine the level of planned savings that will yield a level of income at which there will be no rise or fall in unplanned stocks. [1]
 - (iv) Calculate the amount by which planned savings exceed planned investment at an income level of £120 million. [1]
 - (v) Determine the increase in the level of national income if planned investment rose from £22 million to £28 million. [1]
- [Total 5]

37 Discuss the main advantages and disadvantages of both fixed and floating exchange rates. [10]

38 Discuss the merits and problems of alternative measures that the government might adopt to alleviate the various categories of unemployment. [10]

END OF PAPER