

INSTITUTE AND FACULTY OF ACTUARIES



EXAMINATION

28 April 2014 (pm)

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 37 questions. From question 27 onwards begin your answer to each question on a new page.*
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.

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.

- 1** Which of the following would the production of banking services be classified as?
- A Primary Production
 - B Secondary Production
 - C Tertiary Production
 - D Manufacturing Production
- [1½]
- 2** If an economy moves from producing 10 units of Good X and 5 units of Good Y to producing 8 units of Good X and 6 units of Good Y, the opportunity cost of the 6th unit of Good Y is:
- A 8 units of Good X.
 - B 10 units of Good X.
 - C 2 units of Good X.
 - D 1.25 units of Good X.
- [1½]
- 3** The demand curve for Good X, which is a normal good, will shift to the right if:
- A its price decreases.
 - B the price of a substitute rises.
 - C the price of a complement rises.
 - D consumers' incomes fall.
- [1½]
- 4** Which of the following best describes an annual supply curve?
- A The quantity that producers would like to sell annually.
 - B The quantity that producers are willing and able to sell at each income over the next year.
 - C The quantity that producers are willing and able to produce over the next year.
 - D The quantity that producers are willing and able to sell at each price annually.
- [1½]
- 5** If a maximum price for Good X is fixed above the market equilibrium price there will be:
- A an excess supply of Good X.
 - B an excess demand for Good X.
 - C no tendency for the market price of Good X to change.
 - D an upward pressure on the price of Good X.
- [1½]

- 6** A firm's total costs are £150 when 10 units are produced and the marginal cost of the 10th unit is £40. The marginal cost of the 11th unit is £15. Which of the following is TRUE?
- A The average cost for 11 units is greater than that for 10 units.
 - B The total fixed costs for 11 units are £165.
 - C The average fixed cost for 11 units is the same as the marginal cost of the 11th unit.
 - D The average fixed cost for 11 units is less than the marginal cost of the 11th unit.

[1½]

- 7** A maximum price is set for Good X at £30 which happens to coincide with the free market price. A downward shift in the supply of Good X keeping the maximum price fixed at £30 will lead to:
- A no change in price and a surplus.
 - B no change in price and a shortage.
 - C a fall in price and a fall in the quantity sold.
 - D a fall in price and a rise in the quantity sold.

[1½]

- 8** A welfare loss occurs in a monopoly industry because the price is greater than the:
- A marginal cost of production.
 - B marginal benefit to consumers.
 - C average revenue of the monopolist.
 - D average cost of the monopolist.

[1½]

- 9** The total output and the average physical product of the variable factor of production both always increase as long as the marginal physical product of the variable factor is:
- A positive.
 - B above its average physical product.
 - C negative.
 - D falling.

[1½]

- 10** Second degree price discrimination refers to a 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]

- 11** The profit payoffs to Firm X from combining the various strategies of X (1,2,3,4) and the presumed response of the other firm (S,P,Q,R) in a duopoly industry is given below:

| | | <i>Other Firm's Response</i> | | | |
|---------------------------|----------|------------------------------|----------|----------|----------|
| | | <i>S</i> | <i>P</i> | <i>Q</i> | <i>R</i> |
| <i>Strategy of Firm X</i> | <i>1</i> | 90 | 40 | −10 | 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]

- 12** Global Airways, which is a profit maximising firm, has to decide whether or not to run an extra daily flight between London and Edinburgh. The total daily fixed costs of the airline are £4,000, the total variable costs of the extra flight are £5,000 and the expected revenue from the extra flight is £5,500. In such circumstances Global Airways will:

- A not run the extra flight as it will expect to lose £4,500 from its profits.
 - B not run the extra flight as its expected profit of £500 is insufficient to cover its fixed costs.
 - C run the extra flight as it will add £500 to its profits or reduce losses by £500.
 - D run the extra flight as the expected revenue of £5,500 is more than its fixed costs.
- [1½]

13 If the own price elasticity of demand for Good X is -0.8 and the income elasticity of Good X is -0.3 , which of the following is correct?

- A Demand for Good X is price elastic.
- B A cut in the price of Good X will increase revenue for a firm producing Good X.
- C Good X is a luxury good.
- D Good X is an inferior good.

[1½]

14 In a simple closed economy, consumption is given by the relationship

$$C = 0.75 Y$$

where C is consumption expenditure and Y is Gross Domestic Product.

If government expenditure is £150 million and investment is £50 million, what will be the equilibrium value of the Gross Domestic Product of the economy?

- A £200 million
- B £312.5 million
- C £1,000 million
- D £800 million

[1½]

15 Which one of the following is likely to lead to cost push inflation?

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

[1½]

- 16** Other things remaining the same, the effect of an increase in the budget deficit 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 curve 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]

- 17** Assume that the actual rate of unemployment is above the natural rate of unemployment because the expected rate of inflation is above the actual rate of inflation. If the expected rate of inflation falls to equal the actual rate of inflation then real wage growth will:
- 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]

- 18** The US has been running a large current account deficit, and China has a large current account surplus. If their exchange rates were both flexible, how would such imbalances be eliminated?
- A The US dollar appreciates and the Chinese renminbi depreciates.
 - B The US dollar depreciates and the Chinese renminbi depreciates.
 - C The US dollar appreciates and the Chinese renminbi appreciates.
 - D The US dollar depreciates and the Chinese renminbi appreciates.
- [1½]

- 19** Which of the following are the correct responses for the missing words (i) and (ii) in the following statement?
- Automatic stabilisers act to ___(i)___ government expenditures and ___(ii)___ government revenues during an expansionary period.
- A (i) increase, (ii) decrease
 - B (i) increase, (ii) increase
 - C (i) decrease, (ii) increase
 - D (i) decrease, (ii) decrease
- [1½]

- 20** The budget deficit tends to decrease when:
- A national income falls.
 - B national income rises.
 - C governments decrease the personal income tax rate.
 - D government expenditure increases.
- [1½]
- 21** The equilibrium level of unemployment in an economy is the sum of:
- A frictional unemployment and structural unemployment.
 - B regional unemployment and seasonal unemployment.
 - C structural unemployment and regional unemployment.
 - D frictional unemployment and seasonal unemployment.
- [1½]
- 22** As a result of an economic policy change, interest rates and consumption rise but investment falls. The new policy was:
- A an expansionary fiscal policy.
 - B an expansionary monetary policy.
 - C a contractionary fiscal policy.
 - D a contractionary monetary policy.
- [1½]
- 23** According to the equation of exchange an increase in the money supply is most likely to lead to inflation if the:
- A velocity of circulation decreases.
 - B real national income increases.
 - C velocity of circulation and nominal national income are constant.
 - D velocity of circulation and the real national income are constant.
- [1½]
- 24** For a small open economy the imposition of a tariff on its imports of a good will normally:
- A reduce the domestic price of the imported good.
 - B increase domestic consumption of the imported good.
 - C increase domestic production of the imported good.
 - D increase the quantity imported of the good.
- [1½]

- 25** To prevent the value of the euro from depreciating against the US dollar, the European Central Bank might:
- A buy the euro in the foreign exchange market and increase its foreign exchange reserves.
 - B buy the euro in the foreign exchange market and decrease its foreign exchange reserves.
 - C sell the euro in the foreign exchange market and increase its foreign exchange reserves.
 - D sell the euro in the foreign exchange market and decrease its foreign exchange reserves.

[1½]

- 26** Which one of the following will result in an improvement in a country's terms of trade?

- A A fall in the price of its imports combined with a rise in the price of its exports.
- B A fall in the price of its imports combined with a fall in the price of its exports.
- C A rise in the price of its imports combined with a rise in the price of its exports.
- D A rise in the price of its imports combined with a fall in the price of its exports.

[1½]

- 27** You are given the following data concerning the average product of labour which along with 4 units of capital are the only two factors of production used in the short run production process.

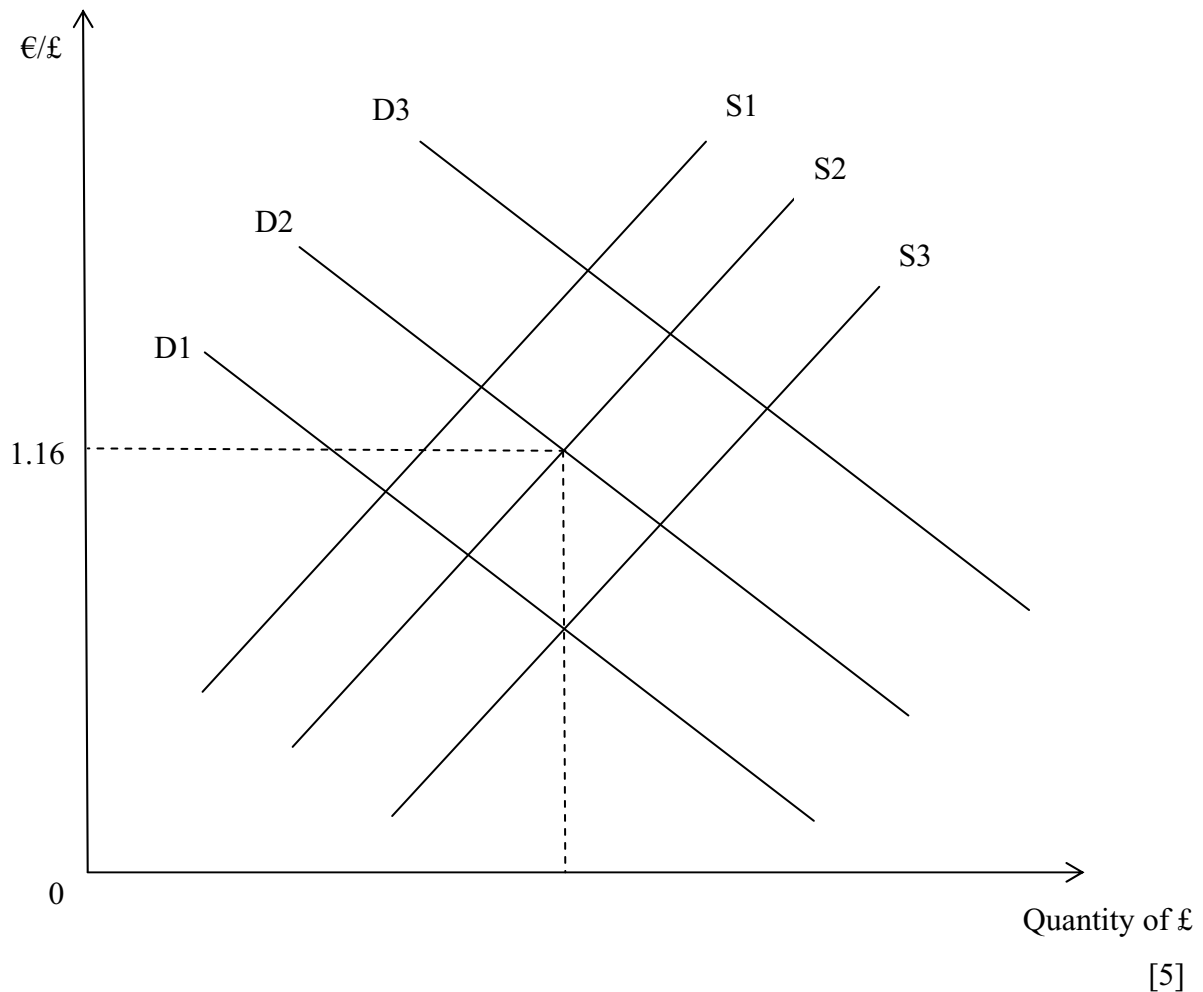
| <i>Units of labour Employed</i> | <i>Average Product of labour in units of output</i> |
|-------------------------------------|---|
| 0 | — |
| 1 | 70 |
| 2 | 80 |
| 3 | 90 |
| 4 | 100 |
| 5 | 90 |
| 6 | 80 |
| 7 | 70 |

Each unit of capital costs £100 and each unit of labour costs £75.

- (i) Calculate the marginal product of the 4th unit of labour. [1]
 - (ii) State whether the average product of labour in the above table is always greater than or equal to the marginal product of labour. [1]
 - (iii) Calculate the average cost of production if 4 units of labour are employed in the short run. [1]
 - (iv) Calculate the total cost of production when output is 490 units. [1]
- [Total 4]
- 28** Discuss with the aid of a diagram how a successful one-off advertising campaign is likely to affect sales of a product in the short, medium and long run. [4]
- 29** Explain the two main characteristics of a public good, giving an example for each. [4]
- 30** Explain with the aid of a diagram the four phases of the business cycle. In your diagram make clear the distinction between the full capacity output trend and the actual trend in economic output. [5]

31 The following diagram shows the initial supply and demand for sterling denoted by S2 and D2 respectively, and the Euro/Sterling exchange rate. With reference to the diagram, state the relevant supply and demand lines and comment on the movement of the exchange rate resulting from each of the following changes:

- (a) a rise in the UK interest rates.
- (b) higher inflation in the UK than abroad.
- (c) improvement in relative investment prospects abroad.
- (d) speculation that the exchange rate will fall.
- (e) a fall in UK incomes relative to incomes abroad.



32 Explain, with the use of a diagram, the circular flow of income in an open economy with a government, financial/banking and a foreign sector, making clear which are the withdrawals and which are the injections in the system. [5]

- 33** Workers in two countries A and B can produce either Good X or Good Y. The annual output of a worker in each country is given in units of each good in the table below.

| <i>Country</i> | <i>Good X</i> | <i>Good Y</i> |
|----------------|---------------|---------------|
| <i>A</i> | 5,000 | 10,000 |
| <i>B</i> | 200 | 5,000 |

- (i) State which country has a comparative advantage in the production of Good X. [1]
 - (ii) State if Country B has an absolute advantage in either of the goods. [1]
 - (iii) State whether trade would take place between the two countries if the terms of trade were 20 units of Good Y for 1 unit of Good X and explain how each country would benefit from trade on these terms. [2]
- [Total 4]

- 34** The government in a closed economy undertakes expenditure on goods and services of £200 million. Investment expenditure is £100 million and the rate of direct taxation is 25 per cent of all income. The consumption function is given by the equation:

$$C = 0.8 Yd$$

where C is planned consumption and Yd is disposable income (i.e. after deduction of income tax).

- (i) Calculate the level of national income at which the government has a balanced budget. [1]
 - (ii) Calculate the government budget deficit/surplus if national income were £600 million. [1]
 - (iii) Calculate the increase in the national income if government expenditure is increased from £200 million to £300 million. [1]
 - (iv) Calculate the level of government expenditure required to achieve the full-employment level of income of £900 million. [2]
- [Total 5]

- 35**
- (i) With the aid of aggregate supply and demand curves, explain the distinction between demand pull and cost push inflation. [3]
 - (ii) Give two examples of the factors that can cause each type of inflation. [2]
- [Total 5]

- 36** (i) Outline the main items that are recorded in the current account of the balance of payments and the macroeconomic significance of a large current account deficit. [4]
- (ii) Discuss the alternative macroeconomic measures that can be used by policy makers to reduce a large current account deficit. In your discussion, consider the relative merits of the alternative measures. [6]
[Total 10]
- 37** (i) Discuss why control of inflation has been a major policy objective of governments in the industrialised countries. [6]
- (ii) Discuss how a policy to control inflation may conflict with the attainment of other macroeconomic objectives. [4]
[Total 10]

END OF PAPER