

**Subject CT7 — Economics  
Core Technical**

**EXAMINERS' REPORT**

**September 2008**

**Introduction**

The attached subject report has been written by the Principal Examiner with the aim of helping candidates. The questions and comments are based around Core Reading as the interpretation of the syllabus to which the examiners are working. They have however given credit for any alternative approach or interpretation which they consider to be reasonable.

R D Muckart  
Chairman of the Board of Examiners

November 2008

## Comments

Comments on solutions presented to individual questions for this September 2008 paper are given below.

*Questions 1–26 The multiple choice section was generally well answered and this was the strongest part of the paper for most candidates. Due to ambiguities in the question as explained below, three possible correct responses were allowed for question 6 namely B, C and D.*

*Notes on Question 6:*

*The investor in the question is displaying declining relative risk aversion, i.e.  $\frac{|c_X|}{w}$  declines as wealth increases. This is compatible with either declining, constant or even increasing absolute risk aversion, ie  $|c_X|$  could either decline, remain constant or even increase with wealth. Therefore B is not wholly correct in that absolute risk aversion could be declining, but it could be constant or increasing; C is not wholly correct in that absolute risk aversion could be increasing, but it could be constant or decreasing; and D is not wholly correct because B or C could be true.*

*Three questions that were not particularly well answered were questions 1, 9 and 22.*

*Question 27 This question was generally very well answered and many candidates gained full marks.*

*Question 28 This question examined some very basic economic concepts but very few answers gained full marks. Few recognised that the law of diminishing returns related to marginal product rather than marginal revenue and many failed to link diseconomies of scale to rising average total costs in the long run.*

*Question 29 A significantly large number gained full marks and it was generally well answered. Occasional errors related to the attempt to locate an average total cost at zero level of output*

*Question 30 There were many excellent answers to this question. It was clear that candidates had a clear grasp of the difference between a risk neutral agent and a risk averse agents. Most candidates correctly calculated the minimum insurance premium.*

*Question 31 On the whole this question was well answered. Diagrams were usually very clear and accurately labelled. The main omission tended to be the line C2 which enabled short run excess profits to be identified. The short run and long run distinction was generally explained well.*

- Question 32*      *Candidates had more success calculating the new levels of national income and less success in calculating changes in the current account balance.*
- Question 33*      *This question was poorly answered. The most common error in part (i) related to the failure to identify government expenditure net of transfer payments. This often meant that part (ii) was then also wrongly calculated i.e. by adding net property income from abroad to an erroneous GDP figure.*
- Question 34*      *This question was generally well answered and a majority of candidates gained full marks.*
- Question 35*      *This question was well answered and this was reflected by a significant number of excellent responses.*
- Question 36*      *This question was generally answered well.*
- Question 37*      *Answers to this question varied quite significantly and responses were generally poor. While parts (i) and (ii) were dealt with reasonably well, few seemed to be able to focus clearly on the requirements of part (iii). Some recognised links between the possibility of printing money and future inflation but failed to link to long term negative implications for economic growth.*
- Question 38*      *Answers to this question also varied quite a lot in terms of quality. Many were able to clearly state the four key axioms of the utility theorem but a significant number of candidates were unable to provide any reasons why the validity of some of the underlying assumptions might be questionable. Many candidates confused investors utility of wealth with that of consumer choice and consequently proceeded make irrelevant comments.*

<b>1</b>	A
<b>2</b>	A
<b>3</b>	B
<b>4</b>	C
<b>5</b>	D
<b>6</b>	B, C or D
<b>7</b>	C
<b>8</b>	C
<b>9</b>	B
<b>10</b>	B
<b>11</b>	A
<b>12</b>	D
<b>13</b>	C
<b>14</b>	A
<b>15</b>	C
<b>16</b>	B
<b>17</b>	A
<b>18</b>	B
<b>19</b>	B
<b>20</b>	C
<b>21</b>	A
<b>22</b>	D
<b>23</b>	D
<b>24</b>	C
<b>25</b>	D
<b>26</b>	A

- 27** (i) Utility maximising consumer will wish to equalise marginal utilities from purchase of Goods X and Y.  
Total income of £1 allows 5 items of X and Y to be bought in total ( $5 \times 20p = £1$ ).  
This holds when 1 unit of X and 4 units of Y are purchased.
- (ii) Total utility = sum of marginal utilities for the purchase of X and Y  
 $= 100 + 200 + 160 + 120 + 100 = 680$ .
- (iii) Income now £1.80, price of X is 20p and price of Y is 40p.  
Equilibrium requires  $MU_x/P_x = MU_y / P_y$  so with  $P_y$  twice  $P_x$ , then in equilibrium  $MU_y$  must be twice  $MU_x$  and the budget must be spent. This occurs at 3X and 3Y. Total spent is 60p on X and £1.20 on Y.

- 28** The law of diminishing returns is applicable only to the short run. One factor of production (normally capital) is assumed to be fixed and one factor of production (normally labour) is variable. Diminishing returns eventually occur as the input of the variable factor of production is raised, which results in diminishing marginal and average product of the variable factor of production. Diminishing returns imply that short run average and marginal cost curves will eventually slope upwards.

Diseconomies of scale are applicable only to the long run average cost curve. All factors of production are variable in the long run and in the presence of diseconomies of scale long run average cost rises as output is increased. Diseconomies of scale mean that if all factors of production are increased in equal proportions output rises less than proportionately. Many reasons can be cited for diseconomies of scale e.g. bureaucracy of large businesses, worker alienation etc.

- 29** (i)
- | OUTPUT | AVERAGE TOTAL COST | MARGINAL COST |
|--------|--------------------|---------------|
| 0      | —                  | —             |
| 1      | 60                 | 10            |
| 2      | 39                 | 18            |
| 3      | 35                 | 27            |
| 4      | 35                 | 35            |
| 5      | 39                 | 55            |
| 6      | 44                 | 69            |
- (ii) Profit maximising output where MC curve cuts ATC curve at ATC's minimum point. At 4 units of output.
- (iii)  $TR = 4 \times £50 = £200$ ,  $TC = 140$  Hence profit = £60

- 30**
- (i) A risk neutral agent does not require an increased expected return to take on increased risk. While a risk averse agent requires an increase in expected return to take increased risk.
  - (ii) A risk averse agent is the more likely to take out insurance as they are prepared to pay an insurance premium even though the expected return is negative. This is because they attach a higher weight to the loss of £100 than the gains of £100 because of the law of diminishing marginal utility of wealth.
  - (iii) The minimum insurance premium  $Q$  which the insurer should be prepared to charge for insurance against a risk with a potential loss  $Y$  is given by the solution to the equation:

$$E[U(a + Q - Y)] = U(a)$$

For the minimum premium  $Q$  we need to solve that the expected utility from taking on the insurance equals the expected utility from not issuing the insurance.

$$0.3 [6000 + 0.8 (2000 - 300 + Q)] + 0.7 [6000 + 0.8 (2000 + Q)] \\ = [6000 + 0.8 * 2000]$$

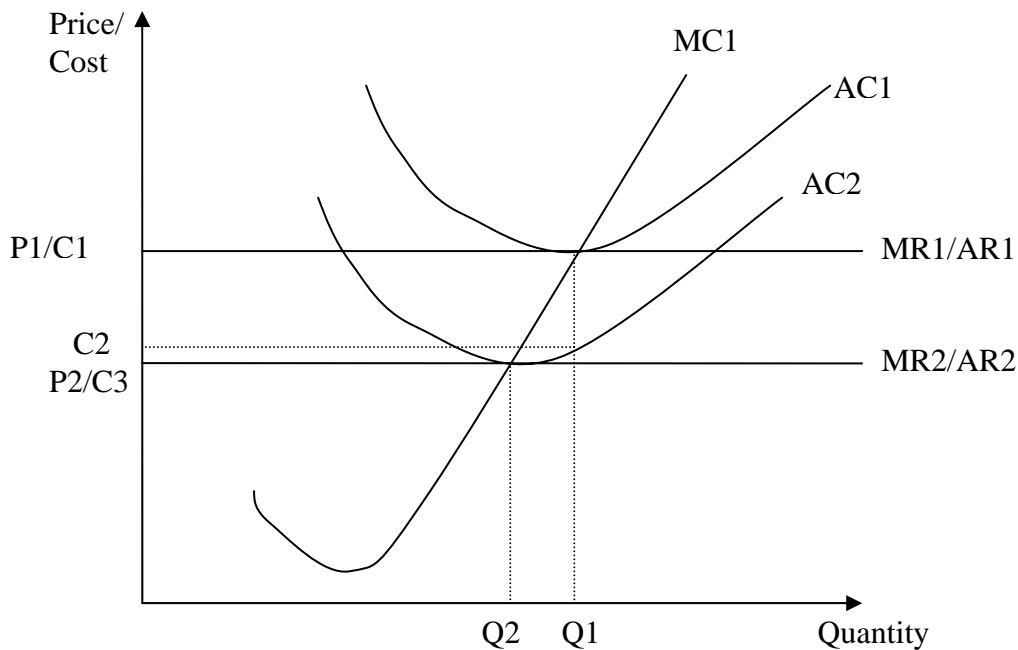
$$1800 + 480 - 72 + 0.24Q + 4200 + 1120 + 0.56Q = 7600$$

$$0.8Q = 72$$

$$Q = 90$$

Hence the minimum premium will be £90.

**31** (i)



- (ii) A fall in fixed costs will lead to a downward shift in the average cost curve from AC1 to AC2. In the short run price and output remain at P1 Q1, however, average cost falls from C1 to C2. The firm will make excess profits  $P1 - C2$  times  $Q1$ . The excess profits will result in new entrants into the industry which will lead to a fall in the price of the good shifting the MR1/AR1 schedule to MR2/AR2. Long run equilibrium is obtained where the firm is making only normal profits with price P2 equal to average costs C3 and output Q2.

**32** (i) Multiplier =  $1 / (1 - MPC) = 1 / (1 - (0.7 - 0.2)) = 1/0.5 = 2$   
 New national income =  $(20 \times 2) + 100 = \text{£}140$  million

- (ii) Initially, Imports = Exports =  $0.2 \times 100 = \text{£}20\text{m}$   
 After increase in G  
 Imports =  $0.2 \times \text{£}140\text{m} = \text{£}28\text{m}$   
 Exports =  $\text{£}20\text{m}$   
 Deficit  $\text{£}8$  million (or  $-\text{£}8$  million)

- (iii) X increases by  $\text{£}20\text{m}$   
 $(20 \times 2) + \text{£}100 = \text{£}140$  million

- (iv) Imports =  $0.2 \times 140 = \text{£}28\text{m}$   
 Exports =  $20 + 20 = \text{£}40\text{m}$ .  
 Hence Surplus  $\text{£}12$  million (or  $+\text{£}12$  million or  $\text{£}12$  million)

- 33**
- (i)  $C + I + G + X - Z$  (note to exclude transfer payments)  
 $90 + 20 + (50 - 20) + 20 - 30 = \text{£}130 \text{ million}$
  - (ii) GDP at market prices + net property income from abroad  
 $130 + 10 = \text{£}140 \text{ million}$
  - (iii) GDP market prices – indirect taxes  
 $130 - 15 = \text{£}115 \text{ million}$
  - (iv)  $(140\text{m} - 15\text{m}) / 0.5 \text{ million} = 125 / 0.5 = \text{£}250$
- 34**
- (i) Transactions motive, precautionary motive, asset motive (may substitute “speculative motive”)
  - (ii) Money multiplier =  $(1 + c) / (r + c) = (1 + 0.4) / (0.4 + 0.1) = 2.8$
  - (iii) Broad money = money multiplier  $\times$  monetary base  
 $= [(1 + 0.45) / (0.05 + 0.45)] \times 100$   
 $= 1.45/0.5 \times 100 = \text{£}290 \text{ million}$
- 35**
- (i) Country B
  - (ii) Country A
  - (iii) No

- 36** In an oligopolistic market:

There are only a small number of firms whereas in a monopoly there is just one firm.

Under oligopoly there is a high degree of interdependence between firms. This means that firms have to take into account decisions made by other firms when making their price and output decisions. This is a problem that a monopolist does not have to worry about although there might be concerns about potential competition entering if it sets prices too high.

Under oligopoly each firm has only a share of the market demand curve whereas for a monopoly the market demand curve is the firm's demand curve.

With oligopoly each firm may be selling either identical or differentiated products and they tend to compete with each other on both price and quality. A monopolist may also produce just one good or a variety of goods.

There are barriers to entry in both market structures although they tend to be stronger in the case of a monopoly. The existence of barriers to entry means that there is the potential to make abnormal profits in the long run in both market structures but



clearly a monopolist would have the potential to yield superior abnormal profits compared to firms operating in an oligopolistic market structure.

- 37**
- (i) The fiscal deficit is the annual amount by which government expenditure exceeds government tax receipts and therefore represents the annual borrowing requirement. By contrast, the national debt is the outstanding stock of all government debt. There is a dynamic relationship between the two, the government has to pay interest on the national debt each year and these interest rate payments are part of this year's government expenditure and consequently have the effect of raising the fiscal deficit. In turn the fiscal deficit when it is financed by increased government borrowing will have the effect of raising the national debt. If the government manages to have a fiscal surplus it could use the excess money to repay part of the national debt.
  - (ii) The direct effect of a rise in interest rates is to raise the cost of current government borrowing and so raise the fiscal deficit. In addition, it will raise the cost of financing the national debt to the extent that the debt has been financed by floating rate debt. The indirect effects of a rise in interest payments are also likely to widen the fiscal deficit initially since the interest rate rise will slow down the economy so increasing government expenditure on social security and dampening government tax revenues.
  - (iii) A high national debt relative to the GDP can be a problem for the economy since the high level of the national debt may lead to excessive interest payments which restricts the government's ability to spend money on items such as health and education which will constrain its future economic growth rate. A high national debt can also act as a drag on the economy because economic agents may fear that the government will be forced to raise taxes on its citizens in future years and this may constrain current consumption and investment. A high national debt can also raise the fear that the government will resort to printing money to redeem the national debt. Finally to the extent that part of the national debt is owed to foreigners part of the interest rate payments go overseas and this will place pressure on the balance of payments and leave the economy vulnerable to a loss of foreign confidence.

- 38** Credit will be given for a fully reasoned argument. The discussion should deal with the axioms of the theorem as outlined below.

The expected utility theorem states that a function,  $U(w)$  can be constructed representing an investor's utility of wealth,  $w$ , at some future date. Decisions are made on the basis of maximising the expected value of utility under the investor's particular beliefs about the probability of different outcomes.

The expected utility theorem can be derived formally from the following four axioms.

1. **Comparability**

An investor can state a preference between all available certain outcomes.

2. **Transitivity**

If A is preferred to B and B is preferred to C, then A is preferred to C.

3. **Independence**

If an investor is indifferent between two certain outcomes, A and B, then he is also indifferent between the following two gambles:

- (i) A with probability  $p$  and C with probability  $(1 - p)$ ; and
- (ii) B with probability  $p$  and C with probability  $(1 - p)$ .

4. **Certainty equivalence**

Suppose that A is preferred to B and B is preferred to C. Then there is a unique probability,  $p$ , such that the investor is indifferent between B and a gamble giving A with probability  $p$  and C with probability  $(1 - p)$ .

B is known as the certainty equivalent of the above gamble.

The four axioms listed above are not the only possible set, but they are the most commonly used.

The validity of the theorem rests on the validity of the underlying assumptions. Candidates should give a reasoned explanation of their conclusion to this part of the question.

## END OF EXAMINERS' REPORT