Diploma Programme
Programme du diplôme
Programa del Diploma

Markscheme

May 2017

Economics

Higher level

Paper 3

18 pages

The following are the annotations available to use when marking responses.

Annotation	Explanation	Mark Value (if applicable)	Shortcut key
AEr	Arithmetic error		
BOD	Benefit of the doubt		
	Cross – incorrect point		Alt+6
DNF	Does not follow		
ECF	Error carried forward		
GA	Good analysis		
GD	Good definition		
GDIG	Good diagram		
GEXP	Good explanation		
GP	Good point		
	Highlight tool		
ILbl	Incorrect labelling		Alt+7
IR	Irrelevant		
L0	Level 0		
L1	Level 1		
L2	Level 2		
N0	No working shown – awards 0 marks	0	
N1	No working shown – awards 1 mark	1	
NAQ	Not answered question		Alt+8
NE	Not enough		
[0+1]	Num 0 plus 1 – awards 1 mark	1	
[1+0]	Num 1 plus 0 – awards 1 mark	1	
[0+2]	Num 0 plus 2 – awards 2 marks	2	
[2+0]	Num 2 plus 0 – awards 2 marks	2	

	Num 1 plus 1 – awards 2 marks	2	
	Num 1 plus 2 – awards 3 marks	3	
	Num 2 plus 1 – awards 3 marks	3	
	Num 2 plus 2 – awards 4 marks	4	
	Num 0 – awards 0 marks	0	Alt+0
NW	No working shown		
	Own figure rule		
	On page comment – text box		Alt+9
	Poor diagram		
	Poorly expressed		
	Question mark – unclear		
	Rounding error		
	Repetition		
	Seen		
	Theory is clearly explained		
	Theory is not clearly explained		
	Tick 1 – awards 1 mark	1	Alt+1
	Tick 2 – awards 2 marks	2	Alt+2
	Tick 3 – awards 3 marks	3	Alt+3
	Tick 4 – awards 4 marks	4	Alt+4
	Tick – colourable		Alt+5
	Too vague		
	Underline tool		
	Valid alternative method		

Notes for examiners:

1. **Whenever relevant, carry over marks must be awarded. If a candidate makes an error in calculation, but then uses the incorrect figure appropriately and accurately in later question parts, then the candidate may be fully rewarded. This is the "own-figure rule" and you should put OFR on the script where you are rewarding this. To do this you will need to use the OFR annotation**

2. **Alternative approaches may be taken in responses to the [4] questions that use A02 command terms. If this is the case and the alternative approaches are valid, then full credit should be given.**

1. (a) Define the term *increasing returns to scale*. **[2]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	*0*
1	*Vague definition.*	*1*
	For the idea that if input/inputs are increased, there is a large increase in output / an increase in productivity ***OR*** that average costs fall as output increases.	
2	*Accurate definition.*	*2*
	For stating that an increase in all inputs leads to a proportionately greater increase in output ***OR*** that an increase in all inputs by x% leads to a greater than x% increase in output.	

(b) Using the data in **Table 1** to support your answer, identify how changes in inputs may result in constant returns to scale **and** in decreasing returns to scale. **[2]**

Constant returns are seen when output increases from 3000 to 4000 units (33 % increase in inputs and output).
Decreasing returns are seen if output increases from 4000 units – increase in inputs – 25 % and then 20 %, while output increases by 20 % and then 14.6 %.

OR by taking ratios of inputs and output (*ie* that 5/4 = 100/80 = 30/24 = 4800/4000 = 1.25)

For identifying and illustrating **one** of these ***OR*** for identifying but not illustrating both. **[1]**

For identifying and illustrating both. **[2]**

*Any valid combination of inputs used should be accepted. A candidate who focuses on one factor of production only may be awarded a maximum of **[1]**.*

(c) Determine:

(i) marginal revenue when output is equal to 4 units. **[1]**

$0 or 0 **[1]**

(ii) average revenue when output is equal to 6 units. **[1]**

$50 **[1]**

(iii) economic profit if output is equal to 2 units and average cost is equal to $130 per unit. **[1]**

$40 **[1]**

*Candidates who provide an answer of $20 per unit may not be awarded a mark here but should **NOT** be penalized in part (h) for the same error (giving the answer as "per unit").*

(d) Calculate the marginal revenue resulting from a fall in price from $8 to $6. **[2]**

$\frac{\Delta TR}{\Delta Q} = \frac{24}{12}$ **[1]**

*Any valid working is sufficient for **[1]** so either 24 or 12 would be sufficient.*

= $2 **[1]**

*An answer of $2 or 2 without workings is sufficient for **[1]**.*

(e) Calculate the price elasticity of demand when price falls from $10 to $8. **[2]**

$\text{PED} = \frac{\%\Delta Q}{\%\Delta P} = \frac{100}{-20}$

*Any valid working is sufficient for **[1]**.*

= –5 or 5 **[1]**

OR an answer of 3 (or –3) if the midpoint method is used.

*An answer of 5 (or –5) without any valid working is sufficient for **[1]** only.*

Correct use of negative sign for ΔP may be present but is not necessary.

(f) Explain why a profit-maximizing monopolist would never choose to operate on the inelastic portion of its demand curve. **[4]**

When demand is price inelastic, a decrease in output / increase in price will:
- increase total revenue **[1]**
- decrease output and therefore total costs **[1]**
- increase profit. **[1]**

Therefore, the profit-maximizing monopolist would never choose to produce on the inelastic portion of its demand curve, as profit could always be increased by raising price. **[1]**

*Responses which state that if demand is inelastic an increase in output will cause revenue to fall **[1]** and therefore profits will fall **[1]** may be awarded a maximum of **[2]**.*

OR an accurate explanation such as the one below may be fully rewarded:

MR = MC is a condition for profit maximization.
MC must be a positive number, so MR must be positive at the profit-maximizing level of output.
If MR is positive, then demand must be elastic.

(g) State **two** characteristics of monopolistic competition. **[2]**

- low or zero barriers to entry
- many firms
- product differentiation/some price-setting power
- the firms are small, relative to the size of the industry.

*Award **[1]** for each valid characteristic up to a maximum of **[2]**.*

(h) Calculate Firm B's short-run profit/loss at the profit-maximizing level of output. **[2]**

350 X (16 – 20) **[1]**

Any valid working is sufficient for ***[1]***.

= –$1400 (or a loss of $1400) **[1]**

*An answer of $1400 or 1400 without workings is sufficient for **[1]**.*

*$4 with working should be awarded **[1]** for valid working.*

If the candidate provided a "per unit" answer in part (c)(iii) and again here, do not penalize again.

(i) Using the diagram on page 8, explain how long-run equilibrium will be reached. **[4]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	*0*
1	*The response is limited.*	*1–2*
	For an explanation that losses incurred will force some firms to leave the industry.	
2	*The response is accurate.*	*3–4*
	For an explanation that losses (of $1400) incurred will force some firms to leave the industry. As a result, the demand curve faced by remaining firms will shift to the right (reducing losses). The process will continue until remaining firms make normal profits.	

*If there is no reference to the diagram (losses or $1400), a maximum of **[3]** may be awarded.*

(j) With reference to the diagram on page 8, outline whether allocative efficiency will be achieved in the long run in a monopolistically competitive market. **[2]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	*0*
1	*Vague outline.*	*1*
	For stating that allocative efficiency requires that P = MC (or MB = MC).	
2	*Accurate outline.*	*2*
	For outlining that as P > MR, then P cannot equal MC when MR = MC.	

*A candidate who draws and refers to long run equilibrium on the diagram provided, explaining that it is inconsistent with the position of allocative efficiency, may be fully rewarded. Please note that stating the condition is sufficient for **[1]**, even if the candidate goes on to provide the incorrect conclusion.*

2. (a) Calculate the social surplus at the equilibrium market price. **[2]**

0.5 X 8000 (14 – 2) **[1]**

*Any valid working is sufficient for **[1]**.*

$48 000 **[1]**

*An answer of $48 000 or 48 000 without any working is sufficient for **[1]**.*

(b) (i) Calculate the resulting shortage in the market. **[1]**

3000 kg **[1]**

(ii) Calculate the change in the consumer surplus after the imposition of the price ceiling. **[2]**

(0.5 X 12 X 6 000) – (0.5 X 8 X 8 000) **[1]**

*Any valid working is sufficient for **[1]**.*

= $4000 **[1]**

*An answer of $*4000 or 4000 *without any workings is sufficient for **[1]**.*

NB if a candidate has calculated the initial consumer surplus in part (a) as part of the social surplus (and workings are seen for this) the "valid working" mark may still be awarded.

(iii) Calculate the welfare loss after the imposition of the price ceiling. **[2]**

0.5 X 2000 X 3 **[1]**

*Any valid working is sufficient for **[1]**.*

= $3000 **[1]**

*An answer of $*3000 or 3000 *without any working is sufficient **[1]**.*

(c) Using the diagram on page 10, calculate the import expenditures on rice. **[2]**

3 X (11 000 – 2000) **[1]**

*Any valid working is sufficient for **[1]**.*

= $27 000 **[1]**

*An answer of $27 000 or 27 000 without any working is sufficient for **[1]**.*

(d) (i) Define the term *comparative advantage.* **[2]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	*0*
1	*Vague definition.*	*1*
	The idea that one country can produce more efficiently than another country.	
2	*Accurate definition.*	*2*
	An explanation that it is when a country can produce a product at a lower opportunity cost than another country.	

(ii) Explain **two** limitations of the theory of comparative advantage. **[4]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	*0*
1	*The written response is limited.*	*1–2*
	For a limited explanation of **one** limitation ***[1]***. For an accurate explanation of only **one or** a limited explanation of **two** limitations ***[2]***.	
2	*The written response is accurate.*	*3–4*
	For accurately explaining any **two** of the following limitations: • why the assumptions of the theory may not hold in the real world *eg* constant opportunity costs, zero transport costs, perfect competition, no trade barriers, free movement of factors of production within the country, homogeneous products (inability of the model in explaining intra-industry trade), the static nature of the theory – ignoring changes in technology. ***(If two of these are explained, full marks may be awarded.)*** • why application of comparative advantage may not bring about the benefits inherent in the theory *eg* structural unemployment, infant industry argument, over-specialization (on primary products), over-reliance on trading partners (the strategic argument). ***(If two of these are explained, full marks may be awarded.)*** • any other reasonable limitation explained. However, the argument that "it assumes only 2 countries/products" should not be accepted as the theory of comparative advantage is a model which can be generalized. For providing an accurate explanation of **one** limitation **and** a limited explanation of another ***[3]***. For providing accurate explanations of **two** limitations ***[4]***.	

(e) Alpha's government decides to impose a $2 tariff on each kilogram of imported rice. Using the diagram on page 10, calculate the government revenue that results from the imposition of the tariff. **[1]**

2 (9000 – 6000) = $6000 **[1]**

(f) (i) Using the data in **Table 1**, calculate Alpha's current account balance for 2016. **[2]**

(852 – 829 + 409 – 435) +144 – 170 **[1]**

*Any valid working is sufficient for **[1]**.*
*Valid working must include (852 – 829 + 409 – 435), and may include +144 or –170 but **neither** –288 or 361 (as these are not current account items).*

= –$29 million **[1]**

(ii) Outline how Alpha's current account balance for 2016 is likely to affect the exchange rate of its currency. **[2]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	*0*
1	*Vague outline.*	*1*
	For the idea that a deficit will cause the exchange rate to fall.	
2	*Accurate outline.*	*2*
	For outlining that a current account deficit implies that the supply of the currency exceeds the demand for the currency causing the exchange rate to depreciate ***OR*** demand for currency shifts (has decreased) left ***OR*** supply of currency shifts (has increased) right, (or, both) either of which causes a depreciation.	

OFR applies if a current account surplus has been calculated in part (f)(i).

(g) (i) State **one** way in which the government of Alpha might bring about a depreciation of its currency. **[1]**

The central bank may:
- sell the currency (in the foreign exchange market)
- reduce interest rates/increase the money supply
- add to its reserves of foreign currency. **[1]**

(ii) Following the depreciation, it is observed that the current account balance worsens initially, but improves after a certain period of time. Explain why this might be expected to happen. **[4]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	*0*
1	*The written response is limited.*	*1–2*
	For the idea that a depreciation makes exports cheaper (and imports more expensive) leading to increased net exports and thus causing an improvement in the current account balance.	
2	*The written response is accurate.*	*3–4*
	For an explanation that the effect of a depreciation, which makes exports cheaper (and imports more expensive) depends on the price elasticities of demand for exports and imports; short-term elasticities are relatively low and therefore the current account balance may worsen; only in the long term, when the Marshall-Lerner condition is satisfied, namely that the sum of these elasticities must exceed unity, will it improve.	

NB It is not necessary to refer explicitly to the Marshall-Lerner condition or the J-curve effect.

3. (a) Distinguish between inflation and disinflation. **[2]**

Inflation refers to a (sustained) increase in the Average Price Level – or the idea that inflation is an increase in the prices of goods and services **[1]**

Disinflation refers to a decrease in the rate of increase of the Average Price Level ***OR*** a decrease in the rate of inflation. **[1]**

NB *the command term is distinguish, so the precision required in the definition of inflation is relaxed.*

(b) (i) Calculate the inflation rate for 2013 **and** for 2015 for Country A. Enter your results in **Table 1**. **[2]**

	Consumer price index (CPI)	**Inflation rate (%)**
2012	151.58	
2013	156.28	*3.10* ***OR*** *3.1*
2014	158.93	1.70
2015	156.07	*–1.80* ***OR*** *-1.8*

[1] *for each correct answer.*

(ii) Identify the year in which Country A experienced disinflation. **[1]**

2014 **[1]**

(c) (i) The consumer price index (CPI) is a weighted price index. Outline **one** reason why weights are used in the construction of the CPI. **[2]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	*0*
1	*Vague response.*	*1*
	For stating that not all goods have the same significance for consumers.	
2	*Accurate response.*	*2*
	For outlining that weights reflect the proportion of total spending allocated so that increased prices in goods with a larger weight lead to a more significant effect on the inflation rate than goods with a smaller weight ***OR*** increased prices are not of equal significance to the typical consumer so weights are used to reflect the relative importance of each good.	

Responses may demonstrate understanding but might not be expressed in the form above. Examiners should reward understanding. Please be aware that the command term is outline and not explain.

(ii) Determine the percentage change in the CPI of Country A between the base year and 2013. **[1]**

56.28 % **[1]**

(d) Outline how a producer price index may prove useful in predicting future inflation. **[2]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	*0*
1	*Vague response.*	*1*
	For outlining that a producer price index measures the costs of bought-in raw materials and intermediate products (factors of production).	
2	*Accurate response.*	*2*
	For outlining that a producer price index measures the costs of bought-in raw materials and intermediate products (factors of production) **and** that current increases/decreases in production costs are likely to lead to increases/decreases in consumer prices in the future.	

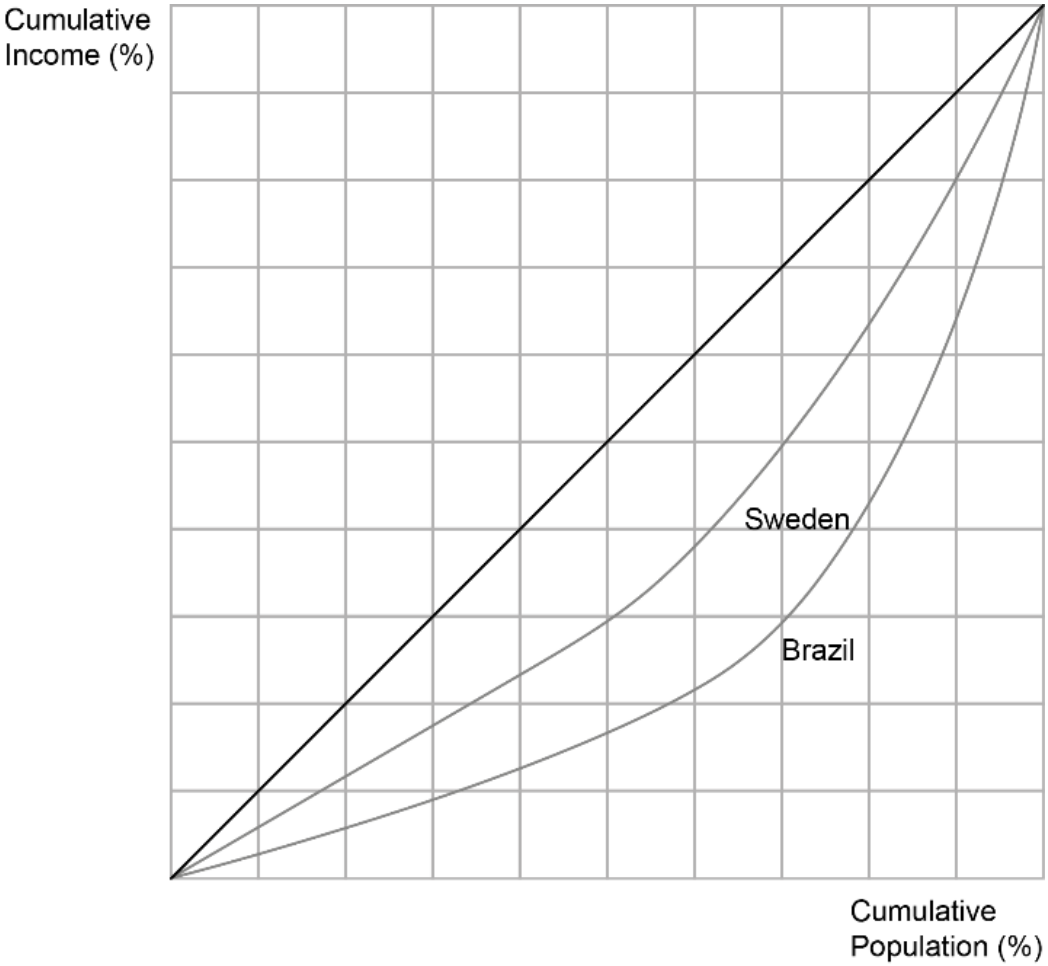
(e) Explain **two** reasons why governments attempt to avoid deflation. **[4]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	*0*
1	*The written response is limited.*	*1–2*
	A limited explanation of **one** reason may be awarded ***[1]***. An accurate explanation of **one or** a limited explanation of two may be awarded ***[2]***.	
2	*The written response is accurate.*	*3–4*
	For accurately explaining any **two** of the following: • deflation induces households to postpone purchases, further decreasing spending which in turn further decreases consumption expenditures and thus AD and leads to a further decrease in real output • real debt of households / firms increases so that consumption expenditures further decrease (or banks accumulate bad loans increasing the likelihood of a bank crisis) • deflation being typically caused by a fall in AD leads to an increase in cyclical unemployment • deflation being typically caused by a fall in AD leads to an increase in cyclical unemployment • the real cost of government debt servicing increases, putting pressure on other areas of government spending • deflation puts downward pressure on firms' profits because after buying raw materials *etc* and making the goods, by the time that they sell them prices will have fallen lower to possibly just above the costs of the raw materials. Therefore firms are less likely to expand/invest • higher real interest rates or lower business confidence will discourage firms from borrowing for investment projects • any other reasonable reason explained. An accurate explanation of **one** reason **and** a limited explanation of another reason may be awarded ***[3]***. **Two** accurate explanations may be awarded ***[4]***.	

(f) Using the data in **Figure 1**, comment on the degree of income inequality in the United States (US), Sweden and Brazil. **[2]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	*0*
1	*Vague response.*	*1*
	For stating that income inequality is greater in Brazil, followed by the US, followed by Sweden.	
2	*Accurate response.*	*2*
	For stating that income inequality is greatest in Brazil, followed by the US, followed by Sweden as the relative quintile shares indicate. Reference to data in the table is required to be awarded ***[2]***. The actual income shares need not be mentioned, but reference to the top 20% in Brazil earning more than the top 20% in Sweden (or similar) is required. It can be inferred that the US is in the middle.	

(g) (i) Using your answer to part (f), sketch and label a Lorenz curve for Brazil **and** for Sweden in the following box. **[2]**



[1] for **two** correctly sketched Lorenz curves **or** properly labelled axes ("Cumulative" is not required).

[2] for **two** correctly sketched Lorenz curves **and** properly labelled axes.

The horizontal axis may be labelled "Households (%)" or "Population (%)". "Cumulative" is not required.

(ii) State whether the US, Sweden or Brazil has the highest Gini coefficient. **[1]**

Brazil **[1]**

(h) Define the term *poverty trap (poverty cycle)*. **[2]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	*0*
1	*Vague definition.*	*1*
	The idea that people cannot escape from poverty.	
2	*Accurate definition.*	*2*
	An explanation that it is any circular chain of events starting and ending in (an indicator of) poverty, or an explanation that low incomes lead to low savings which leads to low investment/low spending on health and education/low spending on physical and human capital, which leads to low growth/productivity, which leads to low income. An appropriate diagram may be fully rewarded.	

(i) Explain **two** reasons for which a highly unequal income distribution may prove a barrier to economic development. **[4]**

Level		Marks
0	*The work does not meet a standard described by the descriptors below.*	*0*
1	*The written response is limited.*	*1–2*
	A limited explanation of **one** reason may be awarded ***[1]***. An accurate explanation of **one or** a limited explanation of two may be awarded ***[2]***.	
2	*The written response is accurate.*	*3–4*
	For accurately explaining any **two** of the following: • a highly unequal distribution of income implies that the poorest are deprived of proper education and health care and thus the growth and development prospects are constrained • a highly unequal distribution of income may lead to lower consumption and thus lower AD (because rich have a lower propensity to consume) leading to slower growth and therefore slower development • higher income inequality leads to more transfer payments (and possibly lower tax revenue), which restricts public investment in education and infrastructure, causing slower growth and reduced possibilities for development • higher income inequality may increase the risk of corruption which increases the costs to business and deters inward investment thus leading to slower growth and development • higher income inequality may act as a barrier to those in poverty opening businesses, thus limiting development opportunities for the poor • unequal distribution of income may lead to more crime and vandalism. More has to be spent on security, reducing the funds available for development-related spending ***OR*** (only **one** of these points may be rewarded) unequal distribution of income may lead to political instability, deterring investors and thus reducing growth and therefore development • any other reasonable explanation. Each reason provided should be linked clearly to development. However, a candidate who has explained reasons clearly but neglected to mention development in either should be penalized for this **once** only – so a well-explained response which does not mention development explicitly may be awarded a maximum of ***[3]***. An accurate explanation of **one** reason **and** a limited explanation of another reason may be awarded ***[3]***. **Two** accurate explanations may be awarded ***[4]***.	