

Markscheme

May 2021

Economics

Higher level

Paper 3

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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.**
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) Assuming that 25 000 pencils are produced initially, identify the opportunity cost for Country H if the production of rice is to be increased by 100%. [1]

15 000 pencils

OR 750 pencils per kg of rice

An answer of 15 000 pencils or 15 000 or 750 is sufficient for [1].

- (b) State **one** reason why the production possibility curve (frontier) for Country H might shift outwards. [1]

Stating that there is an increase in the quantity and/or quality of one or more factors of production

OR *an improvement in technology / institutional framework / population, is sufficient for [1].*

It is not necessary to name a specific factor of production, but a response which correctly states one factor, eg an increase in the quality of labour should be rewarded.

- (c) Using **Table 1**, calculate the cross price elasticity of demand between Good X and Good Y. [2]

$$XED = \frac{\% \Delta Qd(Y)}{\% \Delta P(X)} = \frac{5}{16.67}$$

Any valid working (correct %Δ Qd(Y) or %Δ P(X), provided the formula is not inverted) is sufficient for [1].

= 0.3

An answer of 0.3 without any valid working is sufficient for [1].

(d) Define the term *income inelastic demand*. [2]

| Level | | Marks |
|-------|---|-------|
| 0 | <i>The work does not meet a standard described by the descriptors below.</i> | 0 |
| 1 | <i>Vague definition.</i> | 1 |
| | For an idea that demand/quantity demanded does not change much/at all when income changes. | |
| 2 | <i>Accurate definition.</i> | 2 |
| | The situation where a change in income leads to a less than proportionate/relatively smaller change in demand/quantity demanded (or a lower percentage change in demand/quantity demanded). | |

(e) Explain **two** implications for Country D of a relatively low income elasticity of demand for its primary products. [4]

| Level | | Marks |
|-------|---|-------|
| 0 | <i>The work does not meet a standard described by the descriptors below.</i> | 0 |
| 1 | <i>The written response is limited.</i> | 1–2 |
| | For one implication stated [1]. For one implication explained OR two implications stated [2]. | |
| 2 | <i>The written response is accurate.</i> | 3–4 |
| | For one implication explained AND one implication stated [3]. For two implications explained [4]. | |

Implications may include:

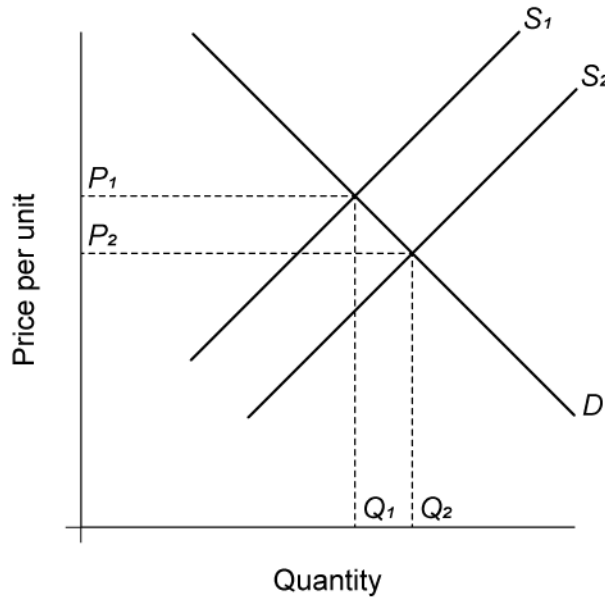
- countries that specialize in primary products may need to diversify in order to achieve economic growth
- (relative) income for those working in the primary sector might decrease, leading to greater inequality
- as economic growth occurs, demand for primary products will increase more slowly than the demand for secondary/tertiary products, causing the prices of primary products to increase more slowly than the prices of secondary/tertiary products
- as economic growth occurs, there will be differences in the rate of expansion of primary industries in relation to secondary/tertiary industries/employment
- because the prices of primary products fall relative to manufactures, the terms of trade for countries specializing in the export of primary products may deteriorate. This may threaten the process of economic development
- as Country D specializes in the export of (income inelastic) goods, it will not benefit from global economic growth (the income gap will widen), or the converse could be true. This implication may be phrased as export revenue being relatively stable despite changes in the global economy
- any other reasonable response.

NB Reference to the effects of negative economic growth should be rewarded.

- (f) Using a diagram to support your answer, explain the impact on the market for Good B of an increase in the price of Good A.

[4]

The market for Good B



| Level | | Marks |
|-------|--|-------|
| 0 | <i>The work does not meet a standard described by the descriptors below.</i> | 0 |
| 1 | <i>The written response is limited.</i> | 1–2 |
| | For a diagram showing an increase in supply (shift to the right) and a decrease in price/increase in quantity OR an explanation that if the price of Good A increases, the quantity of Good A supplied will increase, and as a consequence the supply of Good B will increase, causing a fall in price and an increase in quantity of B. | |
| 2 | <i>The written response is accurate.</i> | 3–4 |
| | For a diagram showing an increase in supply (shift to the right) and a decrease in price/increase in quantity AND an explanation that if the price of Good A increases, the quantity of Good A supplied will increase, and as a consequence the supply of Good B will increase, causing a fall in price and an increase in quantity of B. | |

An alternative diagram would be with P of Good A on vertical axis and Q of Good B on horizontal axis and an upward sloping curve. The explanation should be consistent with this diagram. For full marks the response should refer to the quantity of Good B increasing and its price decreasing.

NB *If the explanation is vague, [1] may be awarded for an appropriate example (such as any product and its by-product).*

A candidate who has provided a correct diagram but refers to quantity supplied (rather than supply) of good B should not be penalized.

- (g) Calculate the shortage resulting from the imposition of the maximum price. [1]

The maximum price = $\$5 \times 0.6 = \3 .

At $\$3$, $Q_d = 300\ 000$, $Q_s = 100\ 000$, so the shortage = $200\ 000$ kg

An answer of 200 or 200 000 is sufficient for [1].

- (h) Calculate the change in producer surplus resulting from the imposition of the maximum price. [2]

Initial PS = $0.5 \times 4 \times 200\ 000 = \$400\ 000$

New PS = $0.5 \times 2 \times 100\ 000 = \$100\ 000$

Any valid working (initial or final PS) is sufficient for [1]

Change in PS = $\$100\ 000 - \$400\ 000$

= $-\$300\ 000$ (ie a decrease)

OR Decrease in PS = $0.5 \times 2 (200\ 000 + 100\ 000) = \$300\ 000$

An answer of 300 or 300 000 without any valid working is sufficient for [1].

For full marks to be awarded the response must provide valid working and include correct units.

NB OFR applies where a candidate has identified the maximum price incorrectly in part (g).

- (i) Calculate the change in consumer expenditure on rice resulting from the imposition of the maximum price. [2]

Initial consumer spending = $5 \times 200\ 000 = \$1\ 000\ 000$

New consumer spending = $3 \times 100\ 000 = \$300\ 000$

Any valid working (initial or final consumer expenditure) is sufficient for [1].

= $-\$700\ 000$ (ie a decrease)

An answer of 700 or 700 000 without any valid working is sufficient for [1].

For full marks to be awarded the response must provide valid working and include correct units.

NB OFR applies where a candidate has identified the maximum price incorrectly in part (g). Examiners should not penalize twice for the absence of a negative sign (ie in both parts h and i).

(j) State **two** methods of non-price rationing. [2]

Award [1] for each appropriate method, up to a maximum of [2].

Methods may include:

- first-come, first-served (queueing)
- allocation according to sellers' preferences
- rationing systems using coupons/vouchers or applying a quota per customer/household *eg* distribution according to income level/size of household would be acceptable
- random allocation by ballot
- any other reasonable response.

(k) With reference to **Figure 2**, outline why the imposition of a maximum price might lead to the creation of a parallel market. [2]

| Level | | Marks |
|-------|---|-------|
| 0 | <i>The work does not meet a standard described by the descriptors below.</i> | 0 |
| 1 | <i>Vague outline</i> For the idea that some consumers are able/willing to pay a higher price than the ceiling OR that farmers may be unwilling to sell at such a low price | 1 |
| 2 | <i>Accurate outline</i> For an understanding that if some consumers are able/willing to pay more than the controlled price of \$3 OR that farmers may be unwilling to sell at such a low price, AND EITHER some producers are willing to sell (illegally) for more than the controlled price, a parallel market will result OR some consumers set up a resale market at higher prices as sellers. NB For L2, reference must be made to both buyers and sellers and to a valid figure (\$3 or 200 000 kg) from the diagram. | 2 |

- (I) Explain **one** reason, apart from the possible creation of a parallel market, why the imposition of a maximum price for rice in Islandia might not enable low-income households to buy enough rice to meet their needs.

[2]

| Level | | Marks |
|-------|--|-------|
| 0 | <i>The work does not meet a standard described by the descriptors below.</i> | 0 |
| 1 | <i>Vague explanation</i> For the idea that there will not be enough rice for everyone who wants to buy. | 1 |
| 2 | <i>Accurate explanation</i> For an explanation that EITHER even though rice may now be more affordable, shortages result in low income families finding it more difficult to access rice (meaning that low-income households may find it more difficult to access (than high-income households)) OR maximum price discourages producers from supplying to the (domestic) market, which makes it less accessible to low-income households. NB An alternative valid response may be fully rewarded. | 2 |

2. (a) Calculate Averka’s nominal gross domestic product (GDP) in 2019. [2]

GDP = 2350 + 1380 + 1624 + (462 – 476)

Any valid working is sufficient for [1].

= \$5340 million or \$5.34 billion [1]

An answer of \$5340 million, \$5.34 billion (or 5340 or 5.34) without any valid working is sufficient for [1].

If a candidate makes a small error in transcribing the figures eg 1642 instead of 1624, then they can still receive [1] for valid working.

Calculating GDP at factor cost (plus subsidies less indirect taxes) may be fully rewarded:

GDP at factor cost = 2350 + 1380 + 1624 + (462 – 476) + 681 – 759

= \$5262 million or \$5.26 billion

For full marks to be awarded the response must provide valid working and include correct units.

(b) (i) Define the term price deflator. [2]

| Level | | Marks |
|-------|---|-------|
| 0 | The work does not meet a standard described by the descriptors below. | 0 |
| 1 | Vague definition. For the idea that a price deflator helps to adjust for inflation. | 1 |
| 2 | Accurate definition. An understanding that it is a price index used to convert nominal GDP to real GDP (or any nominal value to its real value) OR price deflator = nominal GDP/real GDP (× 100). | 2 |

- (ii) Using your answer to part (a), calculate Aversa’s real GDP per capita in 2019. [2]

Real GDP = $5340 \times 100/125 = \$4272$ million

Real GDP per capita = $4\,272\,000\,000/213\,600$

Any valid working is sufficient for **[1]** eg using *nominal GDP instead of real GDP* ($5340/213\,600 = \$25\,000$) or *neglecting to convert to per capita figure* ($=\$4272m$).

Neglecting to multiply by 100 in calculating real GDP may be considered a units error.

= \$20 000

An answer of \$20 000 or 20 000 (without working) is sufficient for [1].

For full marks to be awarded the response must provide valid working and include correct units.

OFR applies from part (a). Per capita figures may be rounded to the nearest dollar.

- (iii) Explain **two** reasons why an increase in real GDP per capita may not lead to an improvement in living standards. [4]

| Level | | Marks |
|-------|--|-------|
| 0 | <i>The work does not meet a standard described by the descriptors below.</i> | 0 |
| 1 | <i>The written response is limited.</i> | 1–2 |
| | For one reason stated [1] . For two reasons stated OR one reason explained [2] . | |
| 2 | <i>The written response is accurate.</i> | 3–4 |
| | For one reason explained AND one reason stated [3] . For two reasons explained [4] . | |

Reasons may include:

- The distribution of income may become uneven, so that the benefits of increasing real GDP may not be enjoyed by some.
- Due to structural changes, employment opportunities decrease for some groups, who will not benefit from higher real GDP.
- More accurate recording of self-provided goods may account for the increase in real GDP without a corresponding increase in output/income.
- An increase in real GDP may lead to negative environmental effects, such as poor air quality, meaning that living standards do not improve.
- The composition of output may have changed. An increase in real GDP that results from an increase in military spending (or without an increase in spending on health and education) may not improve living standards.
- GNP could be lower than GDP due to profit repatriation by MNCs or to income remittances overseas by immigrant workers.
- An increase in real GDP might be accompanied by reduced leisure time/freedom.
- Any other reasonable response.

- (c) Calculate the unemployment rate in Buranda. [2]

$$\frac{1.2}{5.7 + 1.2} \times 100$$

Any valid working is sufficient for [1].

= 17.39% or 17.39

An answer of 17.39% or 17.39 (without working) is sufficient for [1].

- (d) Define the term *underemployment*. [2]

| Level | | Marks |
|-------|--|-------|
| 0 | <i>The work does not meet a standard described by the descriptors below.</i> | 0 |
| 1 | <i>Vague definition.</i> The idea that people do not have enough work. | 1 |
| 2 | <i>Accurate definition.</i> An understanding that it is when people are working, but they are overqualified for the job they hold OR they are employed part time but would like to work full time. | 2 |

- (e) Identify a period in which Country Y experienced disinflation. [1]

- 2011 – 2012
- OR** 2011 – 2013
- OR** 2012 – 2013
- OR** 2012
- OR** 2013

Award [1] for identifying the period correctly.

- (f) (i) With reference to the short-run Phillips curve, describe the relationship between inflation and unemployment in Country Y for the period 2011 to 2016.

[2]

| Level | | Marks |
|-------|--|-------|
| 0 | <i>The work does not meet a standard described by the descriptors below.</i> | 0 |
| 1 | <i>Vague description.</i> | 1 |
| | For the idea that there is a negative (inverse) relationship between inflation and unemployment for the period 2011 to 2016. | |
| 2 | <i>Accurate description.</i> | 2 |
| | For an understanding that there is a negative (inverse) relationship between inflation and unemployment for the period 2011 to 2016, indicating that the economy conforms to the short-run Phillips curve. NB If the candidate demonstrates awareness of the trade-off without explicitly mentioning the SRPC, Level 2 may be awarded. | |

- (ii) Outline how the data for the period 2016 to 2018 may reflect a change in the short-run Phillips curve for Country Y.

[2]

| Level | | Marks |
|-------|---|-------|
| 0 | <i>The work does not meet a standard described by the descriptors below.</i> | 0 |
| 1 | <i>Vague outline.</i> | 1 |
| | For the idea that the economy does not conform to the short-run Phillips curve between 2016 and 2018 OR that both inflation and unemployment have increased. | |
| 2 | <i>Accurate outline.</i> | 2 |
| | For an understanding that an increase in both unemployment and inflation suggests that the short-run Phillips curve has shifted to the right/upwards between 2016 and 2018. | |

- (g) (i) Calculate Buranda’s terms of trade index for 2008 **and** 2018. [2]

2008:

$$\frac{106.5}{108.9} \times 100 = 97.80$$

An answer of 97.80 is sufficient for [1].

2018:

$$\frac{107.2}{124.3} \times 100 = 86.24$$

An answer of 86.24 is sufficient for [1].

NB Candidates who make a similar rounding error/misplace the decimal point/do not multiply by 100 on both calculations should be penalized once only.

- (ii) Using your answers to part (g)(i), explain how the change in Buranda’s terms of trade may act as a barrier to economic development. [4]

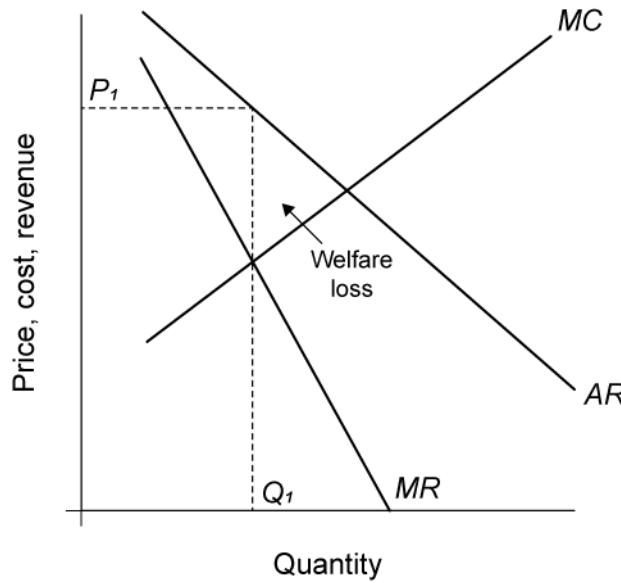
| Level | | Marks |
|-------|--|-------|
| 0 | <i>The work does not meet a standard described by the descriptors below.</i> | 0 |
| 1 | <i>The written response is limited.</i> | 1–2 |
| | For an explanation that the deterioration in the terms of trade means that Buranda must produce and export a greater quantity of goods and services in order to finance its import spending OR one of the following: <ul style="list-style-type: none"> • reducing the funds available for spending on imported goods necessary for development such as capital equipment and pharmaceuticals • Buranda may be forced to focus on production for export, limiting opportunities for diversification • as imports are relatively more expensive a rising current account deficit may result • any other reasonable response. | |
| 2 | <i>The written response is accurate.</i> | 3–4 |
| | For an explanation that the deterioration in the terms of trade means that Buranda must produce and export a greater quantity of goods and services in order to finance a given level of imports AND one of the following: <ul style="list-style-type: none"> • reducing the funds available for spending on imported goods necessary for development such as capital equipment and pharmaceuticals • Buranda may be forced to focus on production for export, limiting opportunities for diversification • as imports are relatively more expensive a rising current account deficit may result • any other reasonable response. | |

3. (a) Outline how a concentration ratio might be used to identify an oligopoly. [2]

| Level | | Marks |
|-------|---|-------|
| 0 | <i>The work does not meet a standard described by the descriptors below.</i> | 0 |
| 1 | <i>Vague outline.</i> For the idea that it measures market power/concentration. | 1 |
| 2 | <i>Accurate outline.</i> For an understanding that it measures the market share of a certain number of firms, an increase in the ratio indicating fewer firms dominating the market. | 2 |

- (b) Using a diagram to support your answer, explain how monopoly power can create a welfare loss. [4]

| Level | | Marks |
|-------|---|-------|
| 0 | <i>The work does not meet a standard described by the descriptors below.</i> | 0 |
| 1 | <i>The written response is limited.</i> For an accurate diagram of a firm with monopoly power showing the equilibrium quantity below the allocatively efficient level of output OR with the welfare loss indicated accurately OR an explanation that monopoly power can lead to the firm producing at a level of output below the allocatively efficient level of output/producing where $P > MC$, resulting in a welfare loss/market failure. | 1-2 |
| 2 | <i>The written response is accurate.</i> For an accurate diagram of a firm with monopoly power showing the equilibrium quantity below the allocatively efficient level of output OR with the welfare loss indicated accurately AND an explanation that monopoly power can lead to the firm producing at a level of output below the allocatively efficient level of output/producing where $P > MC$, resulting in a welfare loss/market failure. | 3-4 |



NB The AC curve is not required. If it is included do not penalize any associated errors.

- (c) State **two** government responses to the abuse of monopoly power. [2]

Award [1] for each valid government response stated.

Answers **may** include:

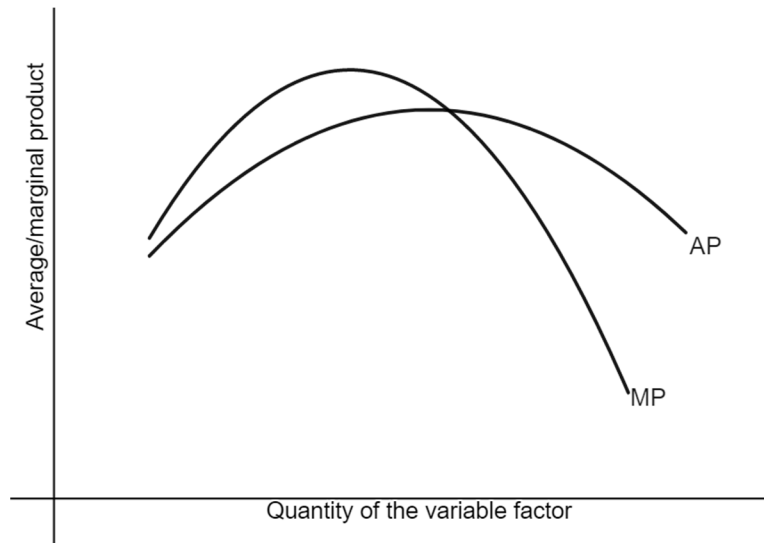
- legislation to prevent collusion between firms
- legislation to prevent mergers deemed to be anti-competitive
- legislation to break up monopolies deemed to be undesirable
- legislation to reduce barriers to entry
- anti-monopoly/antitrust legislation, **but not in addition to any of the above four**
- trade liberalization measures to encourage competition from overseas
- price regulation
- nationalization/state-ownership
- fines/sanctions against firms
- any other reasonable response.

NB Deregulation should not be accepted unless its nature is indicated (as deregulation could also increase monopoly power).

- (d) Outline the law of diminishing returns. [2]

| Level | | Marks |
|-------|---|-------|
| 0 | <i>The work does not meet a standard described by the descriptors below.</i> | 0 |
| 1 | <i>Vague outline.</i> | 1 |
| | For the idea that output increases/changes at a decreasing rate. | |
| 2 | <i>Accurate outline.</i> | 2 |
| | For an understanding that as additional units of a variable factor of production are employed together with one or more fixed factors, the marginal returns/product to the variable factor will decrease at some point. | |

- (e) (i) Sketch the marginal product (MP) **and** average product (AP) curves for this firm. **[2]**

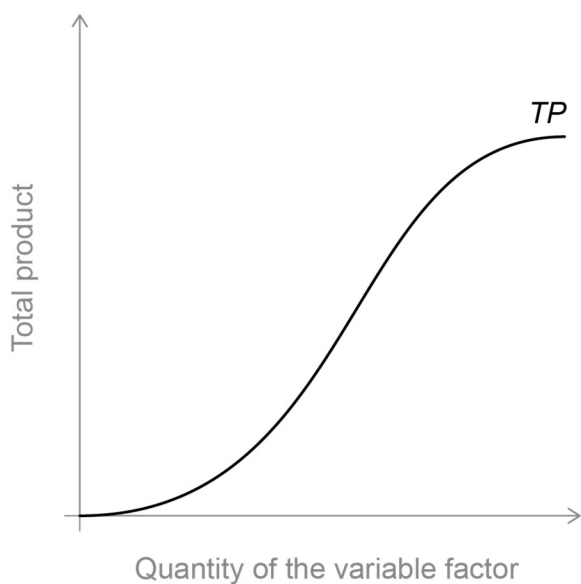


Award [1] for an accurate, labelled marginal product curve.

Award [1] for an accurate, labelled average product curve.

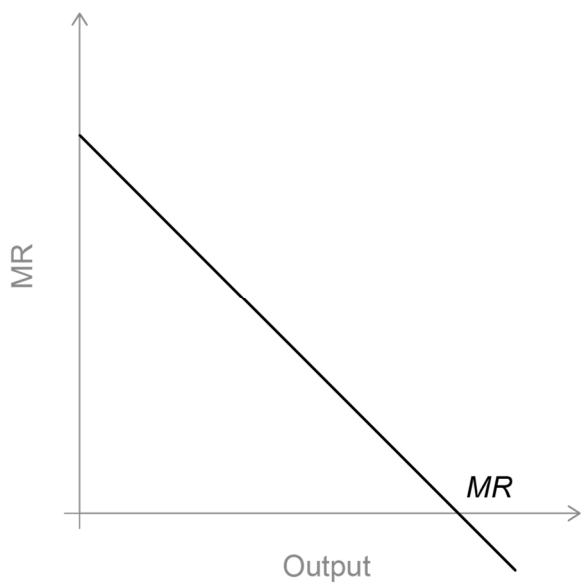
NB *If the shape of each curve is correct, but the relationship between them is incorrect, then a maximum of [1] may be awarded.*

- (ii) Sketch the total product (TP) curve for this firm. [1]



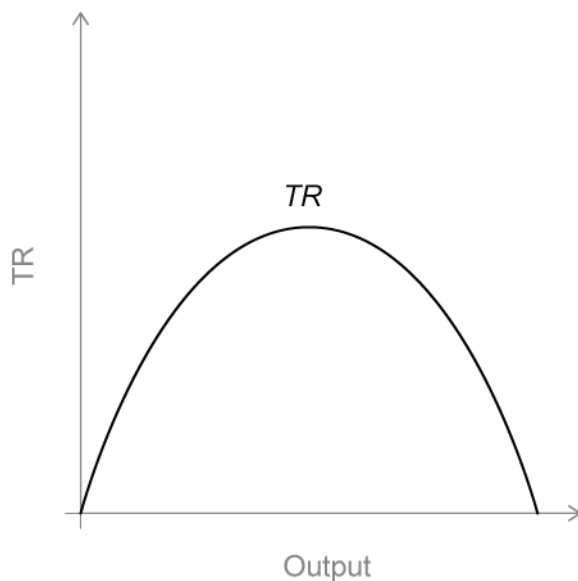
Award [1] for an accurate, labelled TP curve, starting at the origin.

- (f) (i) Sketch the marginal revenue (MR) curve for firms in the widget industry. [1]



Award [1] for an accurate, labelled MR curve (MR must be downward-sloping but need not be linear and need not become negative).

- (ii) Sketch the total revenue (TR) curve for firms in the widget industry. [1]



Award [1] for an accurate, labelled TR curve (must start from the origin, with ever-decreasing gradient, but need not end at the horizontal axis).

- (g) (i) Calculate the firm's total variable costs if output is 20 000 widgets per month. [1]

$$20\,000 \times 18 = \$360\,000$$

An answer of \$360 000 or 360 000 or 360 (without working) is sufficient for [1].

- (ii) Identify the level of output at which the firm would achieve productive efficiency. [1]

85 000 or 85 (allow 84 000 or 86 000)

- (iii) Calculate the firm's monthly total fixed costs if output equals 50 000 units per month. [2]

$$\text{At } 50\,000 \text{ units, } AFC = 15.6 - 12 = 3.6$$

Any valid working is sufficient for [1].

$$FC = 3.6 \times 50\,000 = \$180\,000$$

An answer of \$180 000 or 180 000 (without working) is sufficient for [1].

- (h) (i) State **two** conditions necessary for price discrimination to take place. [2]

Award [1] for each valid condition stated.

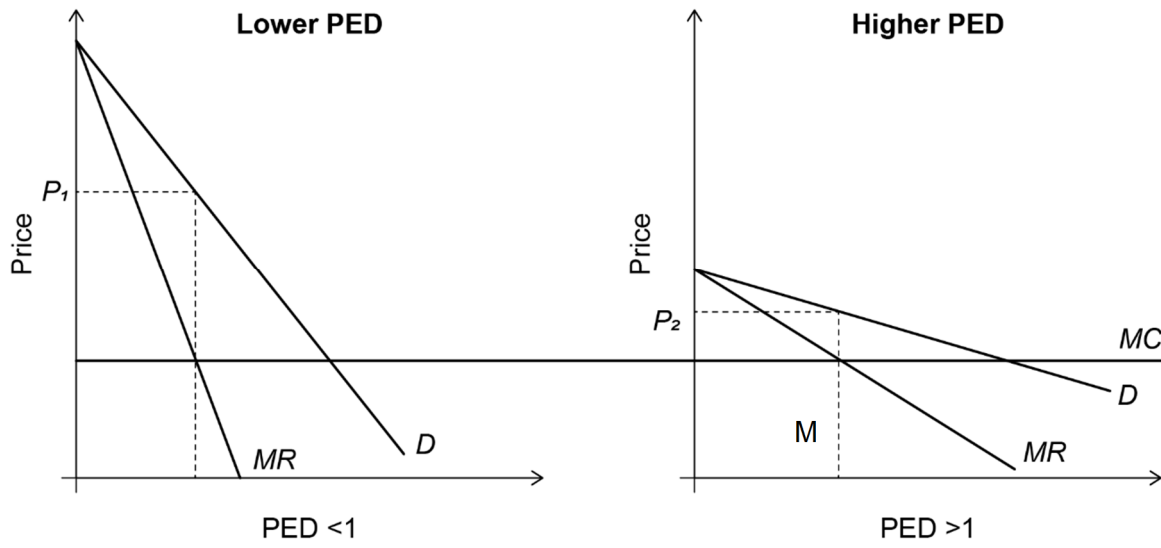
Conditions may include:

- the firm must possess some degree of market power
- there must be groups of consumers with differing price elasticities of demand for the product
- the firm must be able to prevent resale of the product from one market segment to others / separate the groups.

NB A statement that markets are differentiated/divided is not sufficient for [1].

- (ii) Using a diagram (or diagrams), explain why a profit maximizing firm might charge a higher price in one market than in another. [4]

| Level | | Marks |
|-------|---|-------|
| 0 | <i>The work does not meet a standard described by the descriptors below.</i> | 0 |
| 1 | <i>The written response is limited.</i> | 1–2 |
| | For a diagram(s) showing two distinct market segments, with different price elasticities of demand, and profits maximized (MC = MR) in each market at different prices OR an explanation that as price elasticities of demand are different, profit can be maximized by setting different prices with a lower price in the market with more elastic demand and/or a higher price in the market with more inelastic demand. NB Reference to revenue rather than profit should be accepted. | |
| 2 | <i>The written response is accurate.</i> | 3–4 |
| | For a diagram(s) showing two distinct market segments, with different price elasticities of demand, and profits maximized (MC = MR) in each market at different prices AND an explanation that as price elasticities of demand are different, profit can be maximized by setting different prices with a lower price in the market with more elastic demand and/or a higher price in the market with more inelastic demand. NB Reference to revenue rather than profit should be accepted. | |



NB Alternative presentations may include: back to back (mirror) or an additional third diagram indicating the sum of the revenue curves.
