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Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

Level 3 Economics 2024

91400 Demonstrate understanding of the efficiency of different market structures using marginal analysis

Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of the efficiency of different market structures using marginal analysis.	Demonstrate in-depth understanding of the efficiency of different market structures using marginal analysis.	Demonstrate comprehensive understanding of the efficiency of different market structures using marginal analysis.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should attempt ALL the questions in this booklet.

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–15 in the correct order and that none of these pages is blank.

Do not write in the margins (░). This area will be cut off when the booklet is marked.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

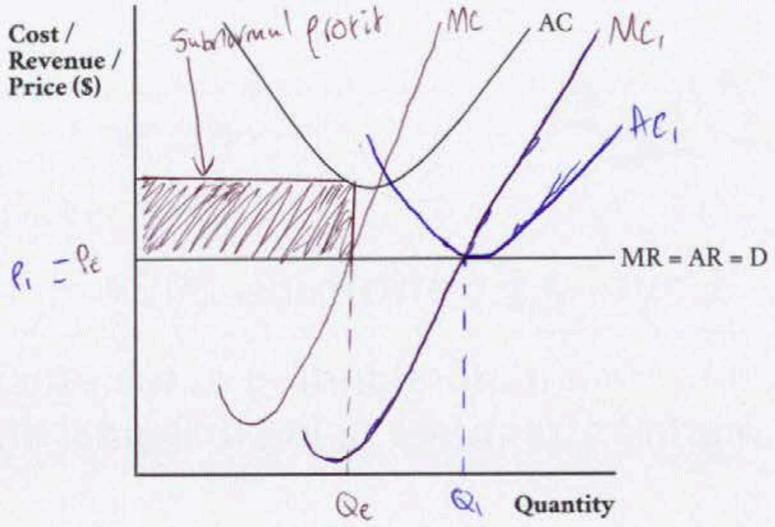
Achievement

TOTAL 09

QUESTION ONE: Perfect competition in the short and long run

Graph One below shows a perfect competition firm making a subnormal profit.

Graph One: Perfect competitor earning subnormal profit in the short run



(a) (i) On Graph One above:

- add and label the MC curve showing the firm minimising losses
- identify and label the loss minimising price (P_e), and quantity (Q_e)
- shade and label the subnormal profit.

(ii) On Graph One, show the long run profit maximising price (label P_1) and output (label Q_1) for the perfect competitor.

(iii) Explain how the perfect competitor reaches its long-run equilibrium. In your answer, refer to marginal analysis, characteristics of perfect competition, and Graph One to explain what happens to the:

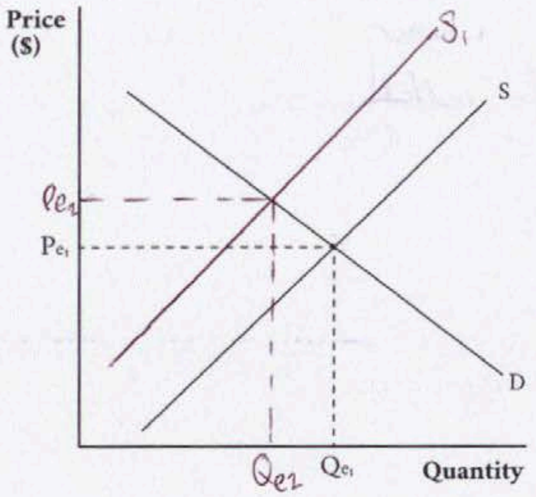
- price
- output
- profit.

The perfect competition ~~will~~ starts off making a subnormal profit in the short run. This is because ~~they~~ their average cost curve sits above their average revenue. The subnormal profit is shaded and labelled on the graph above as 'subnormal profit'. The reason that they are making a subnormal profit in the short run is because as ~~P_1 their a and Q_1~~ P_e and ~~Q_1~~ Q_e ~~their~~ their

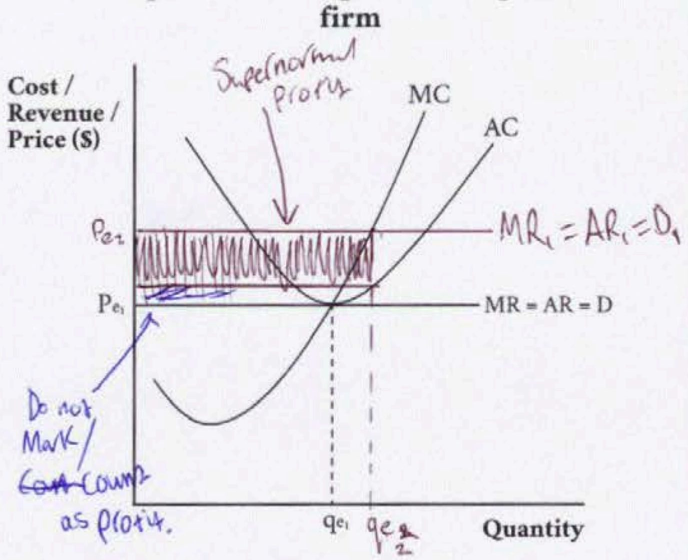
~~price~~ average costs exceeds their average revenue. This ~~mean~~ means that their profit is subnormal as they are not receiving enough ~~[illegible]~~ revenue to cover their ~~costs~~ total costs (accounting + economic). In the long run the price will remain at the same point at $P_1 = P_e$. This is because firms will be ~~[illegible]~~ leaving the perfectly competitive market, as they cannot sustain making a subnormal profit. ~~This will mean that output will the~~ However output will increase from Q_e to Q_1 ~~as y~~ as seen on graph one. This is because in the long run there are no longer any fixed costs, means that both the MC and AC curves shift from MC to MC_1 and AC to AC_1. This means that the new profit maximising position of $MC_1 = MR = AR = D$. This will mean that in the long run the perfect competitor will be making ~~a~~ a ~~subnormal profit~~ ~~[illegible]~~ normal profit, as there is no longer a gap between ~~AC~~ average revenue and ~~AC~~ average cost at the new output of ~~Q_e~~ Q_1.

Severe weather events in the past year have disrupted firms' ability to maintain their normal output levels. Many firms are struggling, some have had to close down business, while others are hanging on in hope of better market conditions, which will increase their profitability.

Graph Two: The market



Graph Three: The perfect competition firm



(b) (i) On Graph Two above, show the impact of the severe weather events on the market by:
- adding and labelling one new curve
- identifying and labelling the new market equilibrium price (P_{e2}) and quantity (Q_{e2}).

(ii) On Graph Three above, show the impact of the severe weather events on the perfect competition firm by:
- adding and labelling one new curve
- identifying and labelling the new profit maximising/loss minimising price (P_{e2}), and quantity (q_{e2})
- shading and labelling the type of profit made.

(c) Referring to Graph Two, Graph Three, and the resource material above, compare and contrast the impact of the severe weather events on the market and the perfect competition firm. In your answer, explain in detail why the market quantity decreases while the firm's output increases.

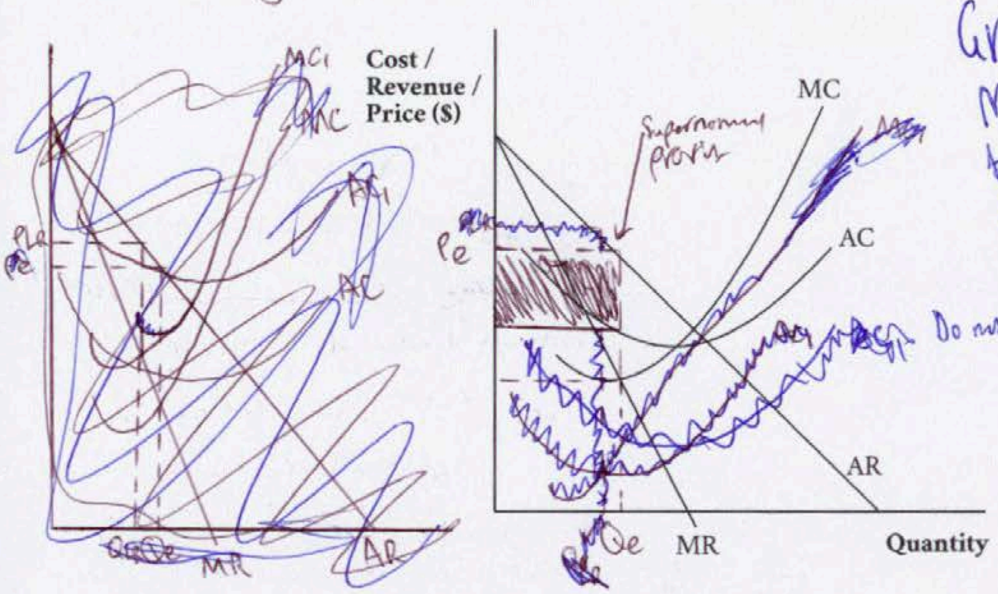
The impacts on the market and the perfect competitions firm shows a great degree of contrast. The market has been heavily ~~impacted~~ impacted by severe weather events, ~~to~~ which ~~have~~ has disrupted the firm's ability to maintain their normal output levels. This has ~~pressur~~ ~~led~~ ~~lead~~ led to an ~~in~~ inward shift

Of the Supply Curve from S_4 to S_1. This has led to a decrease in the market quantity from Qe_1 to Qe_2 as shown on graph ~~one~~ two. The market's supply has decreased as there has been a reduction ~~in out~~ in output levels, and some firms have had to ~~S~~ close down their business. ~~This~~ These severe weather ~~event~~ ~~ti~~ events have actually benefitted the ~~perf~~ ~~perfectly~~ ~~competitive~~ perfect competition firm, as they have remained in the market. Because of the decrease in supply, there is an increase in demand, which can be seen on graph three with the increase from $MR = AR = D$ to $MR_1 = AR_1 = D_1$. This means that the ~~A~~ ~~pef~~ perfect competition firm will see an increase in their output, from ~~Qe~~ qe_1 to ~~Q~~ qe_2. The market situation has benefitted the perfect competition firm, as ~~the~~ some firms ~~leaving~~ ~~to~~ ~~leaving~~ leaving has led to an increase in demand, which ~~&~~ has increased their output, and now ~~means~~ means that they are making a supernormal profit.

QUESTION TWO: Monopoly in the short and long run

Redrawn graph **Graph Four: Monopoly in the short and long run**

Graph four moved to bottom of page 7



(a) (i) On Graph Four above:

- identify the profit maximising output level (label Q_e) for the monopoly in the short run
- identify and label the price (label P_e)
- shade in and label the type of economic profit made.

(ii) On Graph Four above, identify the long run profit maximising output level (label Q_{LR}) and price (label P_{LR}).

(iii) State the type of economic profit made by the monopoly in the:

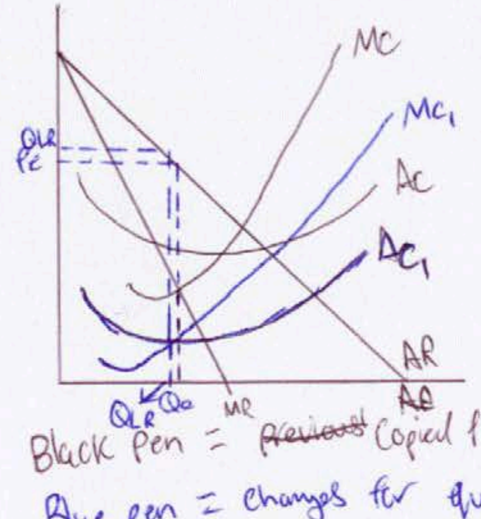
- short run: Supernormal
- long run: Supernormal

(b) Compare and contrast the short and long run profit maximising positions for the monopoly. In your answer, refer to:

- Graph Four and the characteristics of monopoly
- output, price, and profit.

~~The profit maximising positions for the monopoly~~ The monopoly in the short run will be initially ~~making a super~~ producing at Qe, shown on graph four ~~above~~ bottom right. This is because this is the quantity in which MC=MR. ~~The~~ In the long run the monopoly will be producing a decreased quantity at Q_{LR}. The reason that there is now a decreased output is because the Monopoly will decrease their ~~q~~ quantity in the Long run ~~in order to~~ because they have full market control, and producing at MC=MR is profit maximising. ~~The price will~~ In the Short run the price ~~at~~ will be at Pe, and increase to PLR in the long run. This is because the average costs have now decreased, ~~leading~~ because ~~at the~~ & there are no fixed costs. This ~~also~~ also means that the firms marginal costs will decrease. Both of these costs are shown to decrease on the graph below, from AC to AC_1 and MC to MC_1. ~~This means T~~ The monopoly can decrease these costs because they are price makers, and set the price for the consumer. The profit will remain the same in both the short run and the long run, as the monopolies reduction in costs, ~~wou~~ will lead to them receiving a greater supernormal profit in the long run.

Graph four (Redrawn)

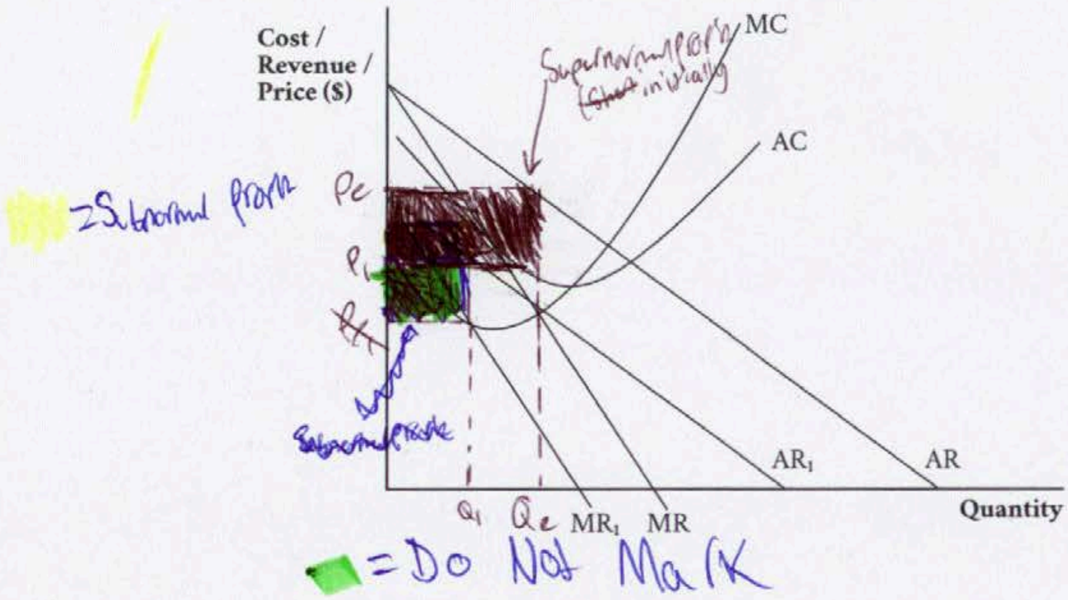


Black Pen = ~~Previous~~ Copied from actual graph

Blue pen = changes for question (a)

Graph Five below shows cost and revenue curves of a monopoly initially earning supernormal profits.

Graph Five: Monopoly – impact of falling demand



Despite being the only firm monopolising the market, falling demand can threaten the survival of the monopoly.

(c) (i) Complete Graph Five above to show the impact of falling demand for the monopoly's product. The new AR_1 and MR_1 curves have been done for you.

- Identify and label the original profit maximising output (Q_e) and price (P_e).
- Shade in the supernormal profit made initially.
- Identify and label the new profit maximising output (Q_1) and price (P_1).
- Shade in and label the type of economic profit made following the fall in demand.

(ii) Explain why the fall in demand threatens the survival of the monopoly in the long run. In your answer:

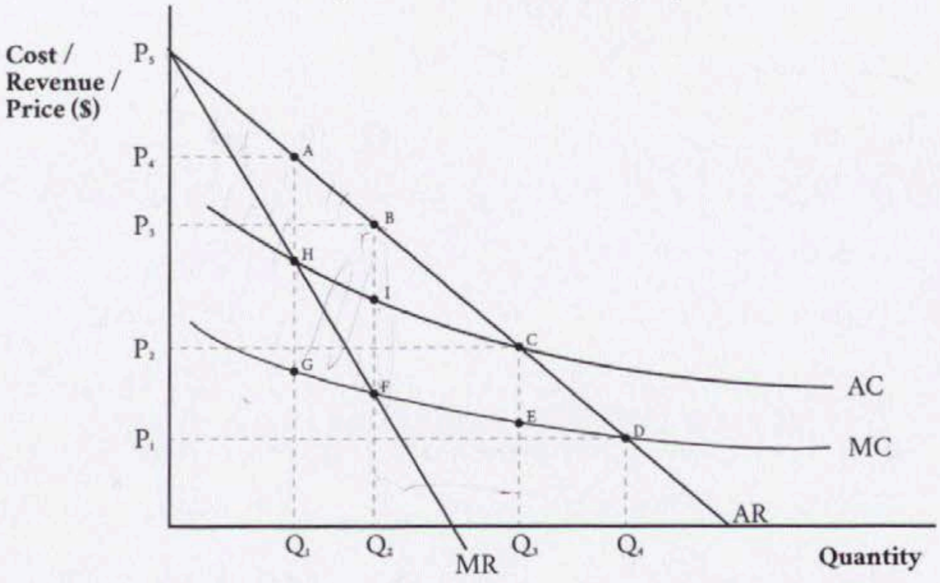
- refer to Graph Five and the concept of marginal analysis
- include the impact on the monopoly's output and profit.

A fall in demand ~~will~~ could have a significant impact ~~on~~ on a ~~flat~~ monopolies ability to survive. ~~A~~ Initially before the fall in demand, the monopoly was producing at Qe. After the fall ~~in~~ in demand however there was a decreased output at Q_1. This means that the fall in demand has resulted in the ~~pe~~ monopoly ~~dees~~ being forced to decrease their ~~output~~ output. The major impact however was on the profits that this monopoly was making, as they have gone from making supernormal profits to subnormal profits following the fall in demand. One of the reasons that making this subnormal profit will be considered so risky to the survival of the monopoly is because of the potential long run consequences ~~Because~~ In the long run the ~~aver~~ average costs and ~~average~~ ~~fixed~~ marginal costs will decrease, however the monopoly is likely to have locked in fixed costs for a while, meaning that they will maintain a subnormal profit for a while. They either risk ~~running~~ ~~themsel~~ digging too much of a financial hole from subnormal profits, or having to shut down operations to stop these subnormal profits.

QUESTION THREE: Natural monopoly

A natural monopoly is a single seller that can supply a good or service at a lower price than if there were two or more sellers in the market competing.

Graph Six: Natural monopoly



When making output and pricing decisions, an unregulated natural monopoly is most likely to profit-maximise. However, the Government could regulate the natural monopoly to price at average cost or marginal cost.

(a) (i) Use the labels in Graph Six to complete Table One below.

Table One

	Profit maximising	Average cost pricing	Marginal cost pricing
Price	R P3	P2	P1
Output	Q2	Q3	Q4
Consumer surplus	FB P5	C P5	D P5
Deadweight loss (if any)	B, Q2 AR	–	D Q4 AR

(ii) State the type of profit made under:

- profit maximising: Supernormal
- average cost pricing: Normal
- marginal cost pricing: Subnormal

Refer to Graph Six and Table One in your answer to part (b) below.

(b) Analyse the impacts of the three pricing options in part (a)(ii) on consumers, the natural monopolist, the Government, and allocative efficiency.

(i) When considering the impact on consumers, explain in detail the pricing option that results in consumers being best off and the pricing option that results in them being worst off.

The consumer surplus is greatest using marginal cost pricing, with an area of ~~A,Q~~ D P_3. This is the largest area of consumer surplus, of ~~the~~ any of the pricing options. This means that the consumers will be best off, because the gap between what they're ~~wh~~ willing to pay and what they actually pay has decreased. ~~So~~ The ~~consumer surplus consumers~~ consumers will only have to pay P_1, which is the lowest price on graph six. The pricing option that has the least consumer ~~Sr~~ surplus is profit ~~maximising~~ maximising, with an area of F, B, P_5. This is the smallest area of consumer surplus, meaning that ~~consumers~~ consumers will be ~~worse off~~ worse off under ~~the~~ profit maximising as a pricing option. The gap between ~~that~~ what consumers are willing to pay, compared to what they actually pay has now increased. This makes ~~consumers~~ consumers worse off, meaning that the marginal cost pricing option is the best for consumers.

Question Three (b) continues on page 12 ➤

(ii) When considering the impact on allocative efficiency, explain in detail the pricing option that results in the most efficient outcome and the one that results in the least efficient outcome.

The pricing option that results in the ~~greatest outcome is~~ most efficient outcome is average cost pricing. ~~The~~ This is because there is no deadweight loss, ~~shown on which graph~~ as ~~this~~ it is allocatively efficient ~~at a price~~ a price at P_2 and output of Q_3 on graph ~~five~~ six. The ~~fats~~ reason that average cost pricing is the most efficient is because it is at supply = demand (AC=AR). This is equilibrium, meaning that all resources ~~are to~~ are being fully used up.

The least efficient pricing option is profit maximising, with an area of B, Q_2, AR, which can be seen on graph ~~five~~ six. This is because the profit maximising position is ~~MC=MR~~ MC = MR, which isn't close to equilibrium at AC=AR. This shows that profit maximising is the least efficient pricing ~~strategy~~ strategy.

(iii) Explain in detail the profit made by the natural monopolist under each of the three pricing options, and how the Government is affected.

The profit being made by the natural monopolist differs greatly depending on which pricing strategy is in use. Profit maximising gives an insight ~~into~~ into the type of profit from the ~~name~~ name it holds. Profit maximising ~~makes~~ makes a supernormal profit for ~~for~~ the monopoly. This is because the ~~price~~ price they're ~~charging~~ charging ~~at~~ of P_3 sits above the AC ~~at~~ curve, which means they're making a supernormal profit. ~~This~~ Their average revenue at Point ~~A~~ B on ~~the graph~~ graph six, is greater than their average costs ~~at~~ at ~~point~~ point I, which ~~Mean~~ means they make a ~~Subnormal profit~~ Supernormal profit. This means that the Government is ~~able~~ affected positively, as they are able to tax the most from this Subnormal profit. The profit maximising pricing strategy brings in the most tax revenue to the government. * The natural monopoly makes a normal profit ~~using~~ using average cost pricing. This is because their average revenue and average cost are both at the same point on graph six at point C. This means that a normal profit is being made ~~M~~ because the average revenue is equal to the average total costs (economic + accounting). ~~A~~ A The normal profit will mean that the government will likely still see some tax revenue, ~~b~~ just less than using profit maximising. This tax revenue is important ~~for~~ for the government as ~~they~~ they may need it to ~~spend a~~ spend on essential services such as ~~heal~~ healthcare. ~~One of the~~ The natural monopoly will make a subnormal profit under marginal cost pricing. This ~~means~~ is because their average costs were ~~lower than~~ greater their average ~~rev~~ revenue. This means that they make a subnormal profit, as their average revenue doesn't cover their average costs (accounting + economic). This means that the government is likely taking away ~~a~~ a decreased ~~amount~~ amount of tax revenue, which is critical ~~for~~ for essential services. However there is a chance that the government doesn't take any tax revenue, as the ~~NM~~ Natural Monopoly could've made an accounting loss.

Subject: Economics

Standard: 91400

Total score: 9

Q	Grade score	Marker commentary
One	A4	The response was awarded A4 because the candidate: • correctly labelled P_e and Q_e, shaded and labelled the subnormal profit, and made the correct changes on Graphs Two and Three • explained that in the long run the perfect competitor will make a normal profit. To gain an M5 grade or better, the candidate could have linked the key characteristics to the explanation of what happens to the firm's output and price and profit in the long run. Marginal analysis when explaining why output increases and correct graph references are also required.
Two	N2	The response was awarded N2. The candidate provided some achievement evidence by: • correctly labelling P_1 and Q_1 on Graph Five • partially explained that the monopolist's output will decrease due to the fall in demand. However to gain an A3 grade or better, the candidate could have correctly shaded and labelled both graphs, referred to the profit maximising position having shifted to $MC=MR_1$, and used marginal analysis when explaining why output decreases.
Three	A3	The response was awarded A3 because the candidate: • correctly identified the type of profit made under each of the three pricing options • explained that consumers are best off under MC pricing due to the largest consumer surplus and are worst off under profit maximising due to the smallest consumer surplus • explained the type of profit made by the natural monopoly under each of the three pricing options and how the government would be affected. To gain an A4 grade or better, the candidate could have correctly identified the areas of consumer surplus and deadweight loss in Table One; given valid reasons for why MCP is best for consumers and profit maximising is worst for consumers; correctly explained that MCP is allocatively efficient while profit maximising is the least efficient using the concepts of deadweight loss, D=S, and the sum of CS and PS being maximised. Correct graph references would also be required.