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91400



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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.

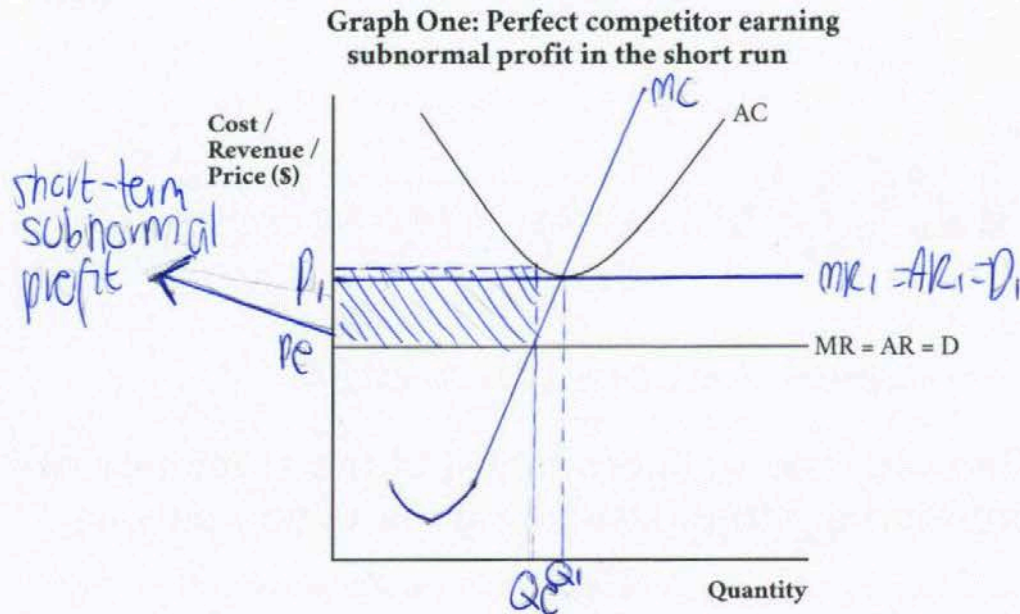
YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

Excellence

TOTAL 24

QUESTION ONE: Perfect competition in the short and long run

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



- (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.

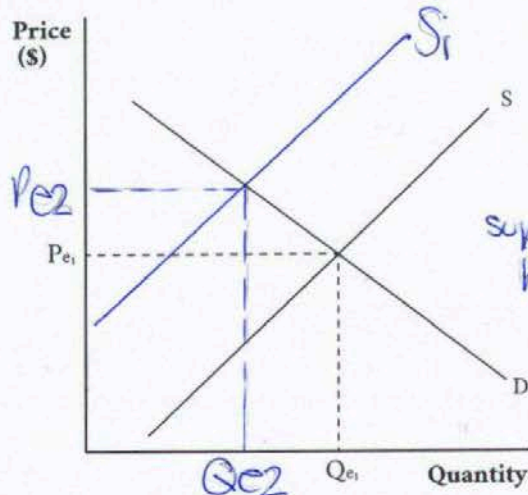
The perfect competitor on Graph One in the short run produces at Q_e as their P_e Q_e , where they earn subnormal profits ($AC > AR$). ~~profits~~ a level of profit less than sufficient to keep them in the market. $MC = MR$, and so they maximise profits. However, in the long run, ~~they~~ this changes. As subnormal

* They can do so as there are no barriers to exit, and they have perfect knowledge.

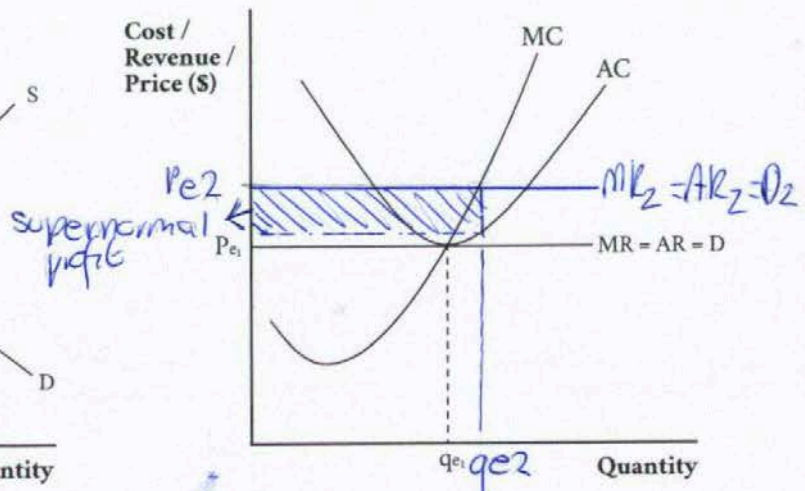
Profits are being made, other firms leave the industry/market. * This causes market supply to decrease, which increases the market price (from P_e to P_1). The perfect competitor must accept the higher price of P_1 as they are a price taker (too small to influence market price). So, this causes their $MR = AR = D$ and to increase to $MR_1 = AR_1 = D_1$. Since MR increased to MR_1 , at output level Q_e , the ~~MR~~ $MR_1 > MC$. The firm does not maximize profits as they earn a marginal ~~profit~~ profit (revenue gained from producing one extra unit is greater than ~~profit~~ cost of making one extra unit). So, to maximize profits, they increase output to Q_1 , where $MC = MR_1$. Here, they now earn normal profits, ~~as they~~ as their $AC = AR$. Normal profits are a level of profit just sufficient to keep the firm in their current business. Now, the perfect competitor has reached its long run equilibrium of P_1, Q_1 , where they earn a normal profit.

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.

★ They can leave as there are no barriers to exit and they have perfect knowledge

"Severe weather events in the past year" according to the resource sheet, ~~these events~~ have caused many firms to leave the market causing a decrease in market supply, from S to S1 on Graph Two. This results in a higher market price of P_{e2} and a

* A price ~~lower~~ near q_1 are too small to influence market price, and so must accept it.

lower market quantity of Q_{e2} . As a result, the firm must accept the higher market price of P_{e2} , causing their $MR = AR = P$ and to increase to $MR_2 = AR_2 = P_2$.

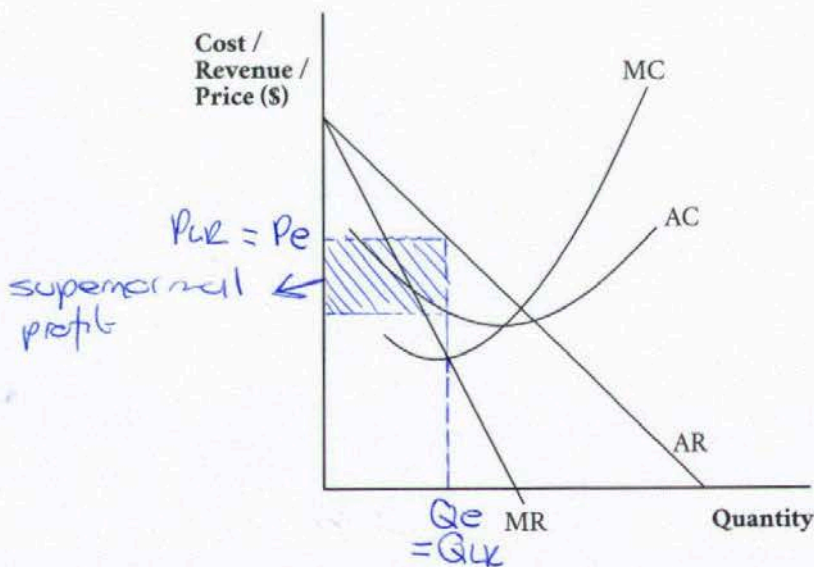
As they are a price taker, ~~they~~ they must accept the new price. So, at output q_{e1} , $MR_2 > MC$. Because of this, the firm will increase output, as they are making a marginal profit. They increased it to q_{e2} , where $MC = MR_2$ and profits are maximised, leading them to earn supernormal profits. This is why the market quantity decreases, yet the firm's output increases.

While the firm made normal ~~profits~~ as their $AR > AC$.

profits at $P_{e1} q_{e1}$ (as $AC = AR$), they now make a supernormal profit at $P_{e2} q_{e2}$, as their $AR_2 > AC$.

QUESTION TWO: Monopoly in the short and long run

Graph Four: Monopoly in the short and long run



- (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 profit.*
 - long run: *supernormal profit.*
- (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.

In the short run, the monopoly produces at $P_e Q_e$, where they earn a supernormal profit (a level of profit greater than sufficient to keep them in the market), as their $AR > AC$. This is shown on Graph Four. However, in the long run,

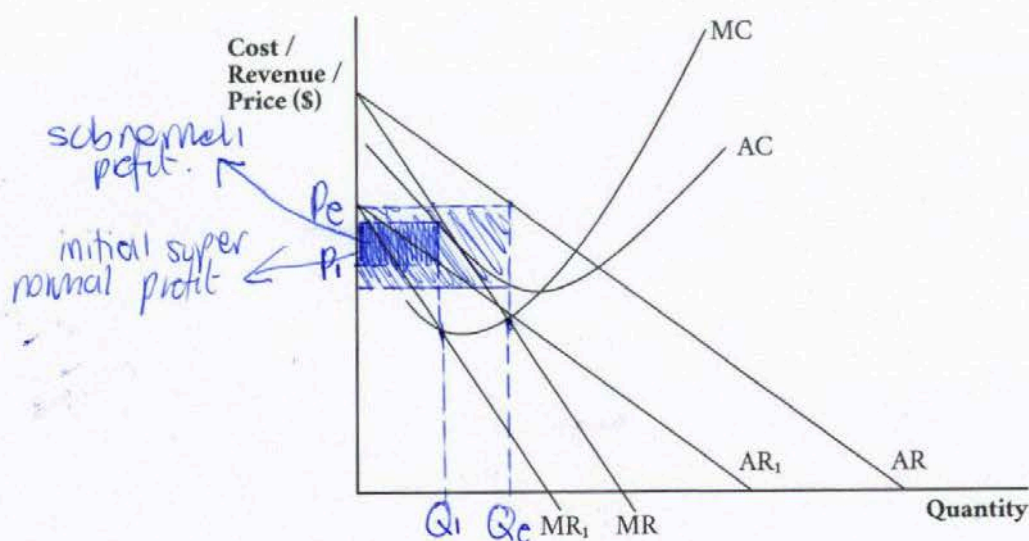
★ Here, $MC = MR$

the market will continue to be able to produce at $P_{UK} Q_{UK}$, where $MC = MR$. Because ~~monopoly~~ in a monopoly, there are high barriers to entry (e.g. technology, resources, etc), preventing firms from entering the market and ~~decreasing~~ increasing market supply. Also, there is limited knowledge, further preventing new firms from entering the market. This means that in the long run, MC is still equal to MR at output $Q_C = Q_{UK}$. The ~~firm~~ ^{monopoly} is a price maker, which means that it is able to control either price or quantity, but not both. So, the monopoly will choose to control ~~the~~ production where $MC = MR$, at $P_{UK} Q_{UK}$, and they will still earn a supernormal profit as $AR > AC$.

subnormal profit / supernormal profit

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 AR₁ and MR₁ curves have been done for you.
- Identify and label the original profit maximising output (Q_c) and price (P_c).
 - Shade in the supernormal profit made initially.
 - Identify and label the new profit maximising output (Q₁) and price (P₁).
 - 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 $MC = MR$
 - include the impact on the monopoly's output and profit.

The ~~monopoly~~ monopoly originally produced at P_c Q_c on Graph Five. Here, they earned a supernormal profit, as the $AR > AC$. (A supernormal profit is a level of profit greater than sufficient to keep her monopoly in its current market). Where they produced, profits were maximised as $MC = MR$.

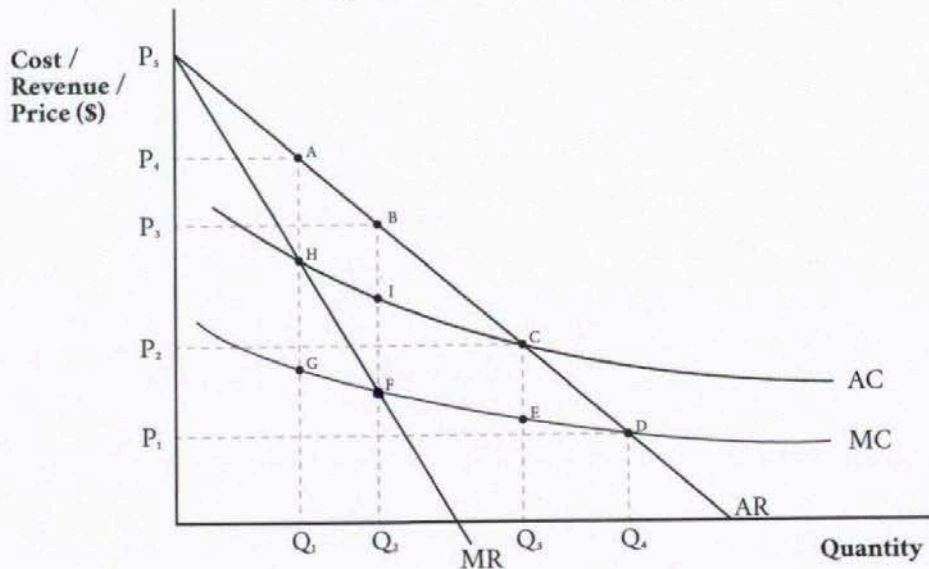
However, following an ~~increase~~^{decrease} in demand, from AR to AR_1 ($AR = \text{Demand}$), things change. At output level Q_e , $MC > MR_1$. This is because if AR decreases, so will MR (from MR to MR_1). This means the monopoly makes a marginal loss ~~at~~ at Q_e , as $MC > MR_1$. So, to maximise profits, the monopoly will reduce output to Q_1 , where $MC = MR_1$. However, even though the monopoly is maximising profits, they still only earn a subnormal profit (a level of profit less than sufficient to keep the monopoly in their ^{in the long run} market), as their $AC > AR_1$. So, the monopoly will produce at P_1, Q_1 , and earn subnormal profits.

The fall in demand threatens the monopoly's survival in the long run as it causes them to produce at a new point: P_1, Q_1 , where they only earn subnormal profits as $AC > AR_1$. This means that if nothing changes in the long-term, and all factors remain constant, the monopoly will shut down in the long term due to the subnormal profits. — Their profit is not sufficient enough to keep them in the industry/profit in the long term. If they ~~continue to~~ earn this profit in the long run, they will shut down.

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	P_3	P_2	P_1
Output	Q_2	Q_3	Q_4
Consumer surplus	$P_5 B P_3$	$P_5 C P_2$	$P_5 D P_1$
Deadweight loss (if any)	$B F D$	$C E D$	<u> </u>

- (ii) State the type of profit made under:

- profit maximising: *supernormal profit*
- average cost pricing: *normal profit*
- marginal cost pricing: *subnormal profit*

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 marginal cost pricing (MCP) will cause consumers to be best off and the profit maximising will cause them to be worst off. This is because consumer surplus is the greatest under MCP (area P_5DP_1) and is the lowest under profit maximising (area P_5BP_3). This is because under MCP, consumers pay a lower price (P_1 compared to P_3), which means that they earn more surplus in each unit, as the difference between the price they are prepared to pay and the actual price has increased. Also, under MCP, consumers consume a higher quantity (Q_4 compared to Q_2), which means they make a surplus on $Q_4 - Q_2$ more units. So, overall, MCP causes consumers to be best off due to a high consumer surplus of P_5DP_1 , profit maximising causes them to be worst off as they have a low consumer surplus of P_5BP_3 and average cost pricing is in the middle, with a medium-level consumer surplus of P_5CP_2 .

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 most efficient outcome is the marginal cost pricing. This is because there is no deadweight loss, as the sum of consumer surplus and producer surplus is maximised. $Q_S = Q_D$. The reason for all of this is because the ~~market~~ natural monopoly produces at a point where $MC = AR$. Since $MC = \text{Supply}$ and $AR = \text{Demand}$, at P_1, Q_1 , Supply is equal to Demand, resulting in allocative efficiency. The pricing option that results in the least allocatively efficient outcome is profit maximising, where they produce at P_3, Q_2 . ~~The~~ This is represented by their largest deadweight loss of BFD. Because MC is much less than AR here, $MC \neq AR$, $AR > MC$.

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

Under profit maximising option, the natural monopolist makes a supernormal profit (a level of profit more than sufficient to keep them in their current business/industry), as their $AR > AC$. Here, the Government does not need to intervene, as regardless of pricing regulation, the natural monopoly would continue to produce here anyway, as $MC = MR$ and profits are maximised.

Under the average cost pricing regulation, the natural monopoly earns a normal profit (a level of profit just sufficient to keep them in the market in the long-term), as their $AC = AR$. The government is affected as they would need to enforce this regulation, perhaps paying enforcement costs.

Under the marginal cost pricing regulation, the natural monopoly would earn a subnormal profit, ~~as~~ (a level of profit less than sufficient to keep them in the market in the long term), as their $AC > AR$. The average cost to make a product is more than the average revenue gained from making a product. This means that in the long term, they would shut-down and leave the market without government intervention. To prevent this from happening, the government would need to intervene. For example, the government could use a subsidy so that the ~~natural~~ natural monopoly does not leave the market. The subsidy would need to at least equal the subnormal profit the natural monopoly earns, so they will at least earn normal profit and remain in the market in the long run. This means the government is worse off as it has less resources/money to spend on the next best/other alternatives, such as healthcare, education, etc.

Extra space if required.
Write the question number(s) if applicable.

QUESTION
NUMBER

Q3

~~Q3~~

b(ii)

That means Demand \neq Supply, as Demand $>$ Supply. The sum of consumer and producer surplus is not maximised, as even though the producer surplus is maximised here, consumer surplus is extremely low, at P_3B_3 .

Q3

b(iii)

The government may need to cut or reduce expenditure for such areas in order to fund/cover the costs for the subsidy.

So, overall, the government is worse off under marginal cost pricing as it requires the most government spending. They are best off under profit maximisation as no government spending is needed. Perhaps, only a little bit of government spending may be required under average cost pricing, to enforce the pricing requirement. (Enforcement costs may also be needed for marginal cost pricing requirement).

Subject: Economics

Standard: 91400

Total score: 24

Q	Grade score	Marker commentary
One	E8	<p>The response was awarded E8 because the candidate:</p> <ul style="list-style-type: none">referred to key characteristics of perfect competition and marginal analysis when explaining why price and output increase, and why the profit goes from subnormal to normal in the long rungave valid reasons when explaining why the market quantity decreases while firms' output increases.referred to specific labels from the graphs
Two	E8	<p>The response was awarded E8 because the candidate:</p> <ul style="list-style-type: none">gave valid reasons why output, price, and profit will not change from the short run to the long run for the monopoly by referring to its key characteristicsrecognised that a decrease in demand shifts the AR and MR curves and, using marginal analysis, explained that the profit maximising position for the monopoly shifts too, leading to a decrease in price and output, resulting in a subnormal profitreferred to specific labels from the graphs
Three	E8	<p>The response was awarded E8 because the candidate:</p> <ul style="list-style-type: none">explained that consumers are better off under MC pricing as evidenced by the largest CS, and included the price and quantity reasons for why the CS is the largest; and that consumers are worse off under profit maximising as evidenced by the smallest CS, and included the price and quantity reasons for why the CS is the smallestexplained that MC pricing is allocatively efficient while profit maximising is least efficient using the concepts of deadweight loss, $D=S$, and the sum of CS and PS being maximisedexplained the type of profit made by the natural monopoly and how each of the three pricing options affect the governmentreferred to specific labels from the graph or table.