

No part of the candidate evidence in this exemplar material may be presented in an external assessment for the purpose of gaining credits towards an NCEA qualification.

3

91400



NEW ZEALAND QUALIFICATIONS AUTHORITY
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Level 3 Economics, 2015

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

2.00 p.m. Wednesday 18 November 2015
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 2–10 in the correct order and that none of these pages is blank.

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

Merit

TOTAL

17

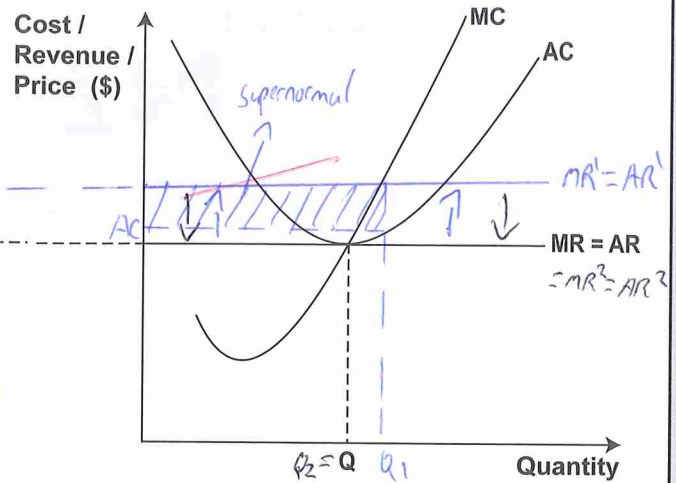
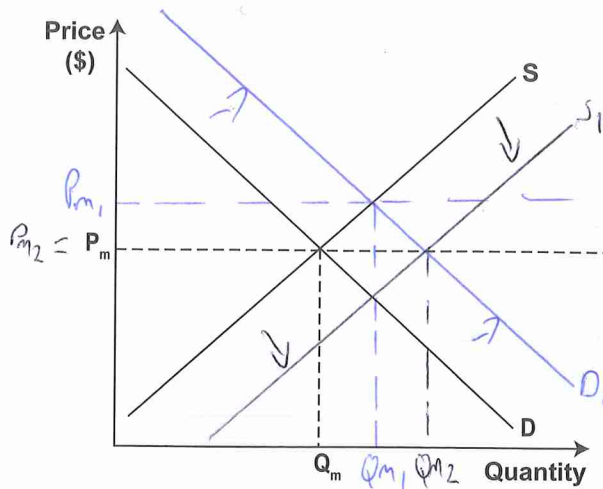
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QUESTION ONE: PERFECT COMPETITION

In the short run
In the long run

Graph One: The market

Graph Two: The individual perfectly competitive firm



- (a) (i) Complete Graph One to show the impact of an increase in market demand on the market equilibrium price and quantity. Label the new price P_{m1} and the new quantity Q_{m1} .
- (ii) Complete Graph Two to show the impact of an increase in market demand on the short-run profit maximising level of output for the individual firm. Label the new level of output as Q_1 .
- (iii) On Graph Two, clearly shade and label the new level of economic profit that will be earned by the individual firm at Q_1 . Identify the economic profit as normal, subnormal, or supernormal.
- (b) Use **marginal analysis** to compare and contrast the short-run and long-run profit and output decisions of a perfect competitor after an increase in market demand.
In your answer:
- explain in detail the changes to the short-run level of output and profit for the individual firm as a result of the increase in market demand
 - make changes to Graph One to show how the market equilibrium price and quantity will be affected in the long run
 - explain how the long-run changes in the market will affect the long-run levels of output and profit for the individual firm
 - refer to Graph One and Graph Two.

Perfect competitors are price takers, due to the number of identical businesses selling identical goods. This means they have no influence on the price and must accept the price the market determines through its demand. If the demand increases from D to D_1 , then the market price will increase (from P_m to P_{m1}) and therefore the quantity demanded from the market. This means the price the individual perfectly competitive firm will

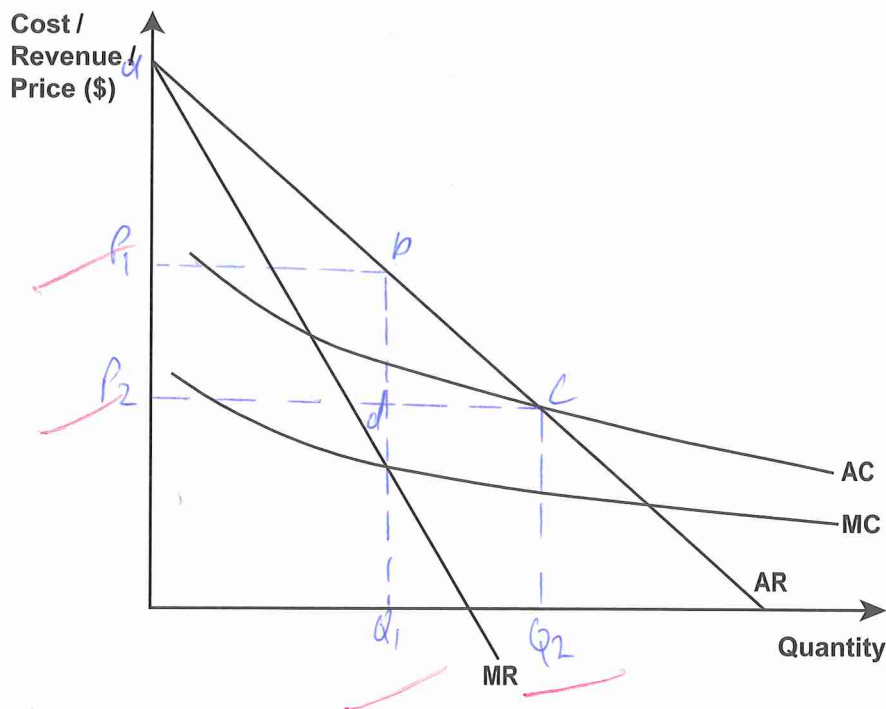
Charge will increase from P_a to P_{m1} . This will cause the firm to increase its demand to meet its new profit maximizing point. This is when $MC = MR$, marginal cost equal marginal revenue. As the marginal revenue has increased to MR' there will be a new profit maximizing output at Q_1 . This is the profit maximizing output, because if the firm operated beyond Q_1 then $MC > MR'$ which means the firm would be making marginal losses. Also if the firm operates below Q_1 then $MR' > MC$. This would mean the firm could produce additional output and make marginal profits. Therefore the firm will increase its quantity produced to Q_1 . As a result in this increase in price while costs remained constant, the firm will, in the short run, make supernormal profits.

In the long run, as there are no barriers to entry into a perfectly competitive market, other firms will enter the market, so as to also make supernormal profits. This increases the market supply to S_1 , causing the total quantity produced to increase up to Q_{m2} . This supply increase will lead to a surplus at P_{m1} , causing the price to decrease till the quantity supplied stops increasing. This means that in the long run the price will fall back to P_{a2} as firms will now be making normal profits, giving no more incentive for other firms to join the market. This means for the individual firm, as a result of the increase in market supply and the falling price to P_a , the firm in the long run will decrease its level of output from Q_1 to Q_2 and will be making normal profits.

QUESTION TWO: NATURAL MONOPOLY

KiwiRail is a state-owned enterprise that was nationalised (bought back by the Government) in 2008. It can be considered an example of a natural monopoly in the New Zealand market for rail transport.

Graph Three: The New Zealand market for rail transport



- (a) On Graph Three, label the profit maximising price (P_1) and quantity (Q_1).

One of the main benefits of KiwiRail being nationalised is that the Government can regulate a price that will encourage greater use of rail transport. Average cost pricing would be one method of achieving this objective.

- (b) Compare and contrast the impact on consumers, KiwiRail, and allocative efficiency of regulating average cost pricing. Assume KiwiRail is initially at the profit maximising equilibrium of P_1 and Q_1 .

In your answer:

- on Graph Three, identify the price (P_2) and quantity (Q_2) of rail services that would be provided if regulated average cost pricing was used by KiwiRail
- explain in detail the impact of regulated average cost pricing on consumers of rail transport and consumer surplus
- explain in detail the impact of regulated average cost pricing on KiwiRail's economic profit
- explain in detail why regulated average cost pricing would result in a more allocatively efficient outcome compared to the profit maximising equilibrium
- refer to Graph Three.

without regulating to average cost pricing, KiwiRail would produce at $MC=MR$ which is the profit maximising position. This led

to a consumer surplus of $q_1 P_1$ at the higher price of P_1 . This was allocatively inefficient as it was overpriced and underproducing, meaning there was large amount of surplus not picked up by producers or consumers. If Kwik! rail was regulated to average cost pricing, then the price would drop to P_2 , causing consumers to increase their demand to Q_2 . This would lead to an increase in consumer surplus to $q_2 P_2$.

This would cut down Kwik! rail's economic profit. ~~Before~~ Before regulation Kwik! rail was making supernormal profit, as without competition they are able to operate at supernormal profits in the long run. However when they are regulated to average cost pricing, $AC = AR$, meaning that Kwik! rail will now be making a normal profit - enough profit to keep Kwik! rail in business.

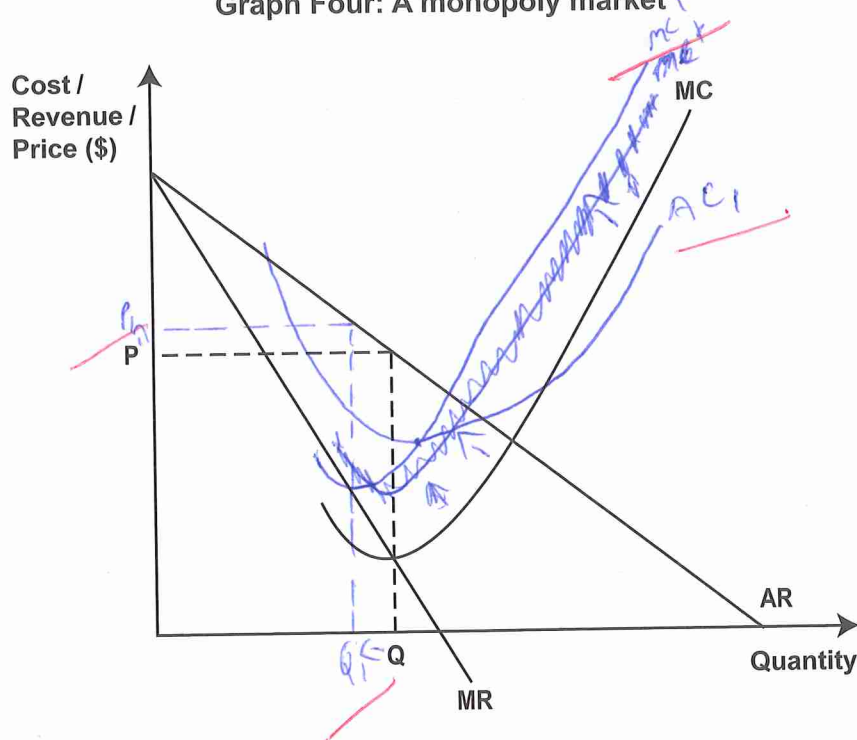
This would lead to a gain in allocative efficiency, as the gain in consumer surplus would be greater than the loss to Kwik! rail, causing the deadweight loss to decrease to bcd. This is not fully allocatively efficient, but as the ^{output} quantity has increased towards the allocatively efficient output, regulated average cost pricing will result in a more allocatively efficient outcome compared to the profit maximising equilibrium.

QUESTION THREE: MONOPOLY

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On 1 April 2014, the New Zealand minimum wage was increased to \$14.25. This would have resulted in a significant increase in labour costs for firms that were paying workers the previous figure of \$13.75.

Graph Four: A monopoly market



- (a) Complete Graph Four to show the impact of increased labour costs for a monopoly. Clearly label any changes.
- (b) Explain in detail, using **marginal analysis**, the change in the profit maximising price and quantity as a result of increased labour costs.

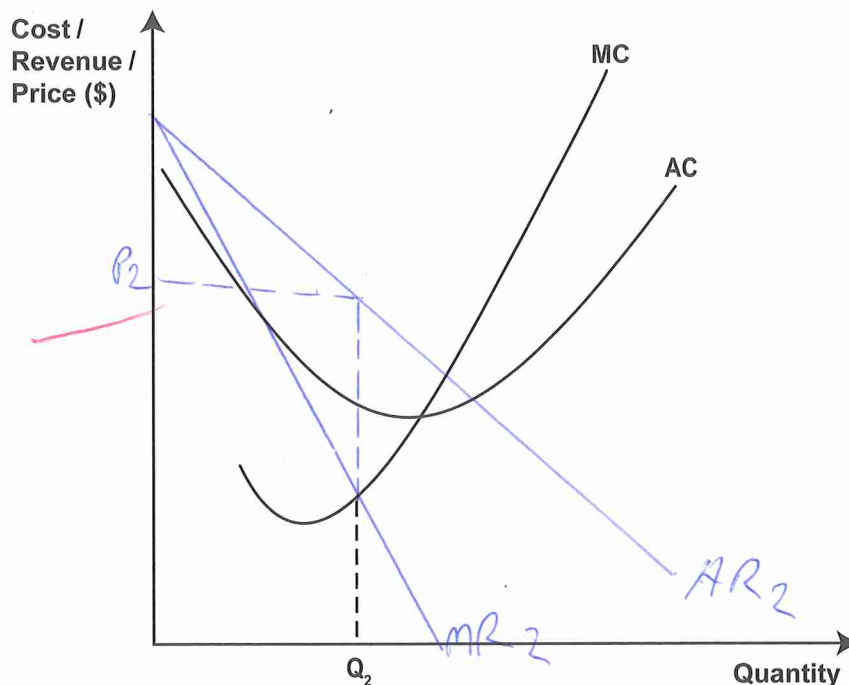
Due to increased labor costs, the MC curve has moved and shifted to the left. If the monopoly continued to operate at Q and the price P, they would now be making marginal losses, as at this price and quantity MC is now greater than MR. Therefore the monopoly will decrease its output and increase its price till $MC = MR$, therefore the profit maximizing price will increase from P to P'.

- (c) Compare and contrast the long-run price and output decisions of a monopolist earning a subnormal profit with a monopolist earning a supernormal profit.

In your answer:

- on **Graph Four** on the previous page, draw and label the average cost curve for the monopolist if the increase in labour costs results in a **subnormal** profit being earned. Label the curve **AC₁**.
- explain in detail what the monopolist will do in the long run if **subnormal** profits continue to be earned and there are no other changes in costs or revenue
- on **Graph Five** below, draw and label the revenue curves for a profit maximising monopolist earning a **supernormal** profit at **Q₂**. Label the curves **MR₂** and **AR₂**, and the price **P₂**
- explain in detail why the monopolist producing at **Q₂** can continue to earn **supernormal** profits in the long run
- explain in detail why the price and output decisions of the monopolist will remain unchanged in the long run if **supernormal** profits continue to be earned.

Graph Five: A monopoly market



If the monopolist continues to earn subnormal profits in the long run and there are no other changes in costs or revenue, then the monopolist will leave the market. As the monopolist could make better returns elsewhere, the monopolist has no incentive to stay in a market where they are making subnormal profits in the long run.

However if a monopolist is making supernormal profits at the profit maximising output of Q_2 , the monopolist will stay and continue to make supernormal profits in the long run. In a monopoly market

there are strong barriers to entry, meaning that even if other firms wanted to join the market, it is very unlikely they would be able to. Therefore ~~as~~ a monopolist will continue to make supernormal profits in the long run.

A monopolist is able to control either the price or output because of the lack of competition. This means that if a monopolist is making ~~supernormal~~ supernormal profits at Q_2 or P_2 it will not change either of these, as it is at the profit maximising equilibrium. This means the pricing or output decision will remain unchanged if a monopolist is making supernormal profits in the long run.

Merit exemplar for 91400 2015			Total score	17
Q	Grade score	Annotation		
1	M6	<p>Part (a)</p> <ul style="list-style-type: none"> All graph work correct and clearly drawn and labelled <p>Part (b)</p> <p>Short run</p> <ul style="list-style-type: none"> Does not explain the increase in AR/MR to AR'/MR' needed for Merit but does recognise the perfect competitor is a price taker and must accept the constantly changing prices. This was accepted as alternative evidence. Uses marginal analysis to explain the new quantity supplied, however, is not clear that the quantity at the original output Q would be missing out on potential marginal profits. Recognises the SR profit is supernormal but not that $TR/AR > TC/AC$ <p>Long run</p> <ul style="list-style-type: none"> Does not recognise the fall in AR'/MR' to AR/MR Does not use marginal analysis to explain the decline in output from Q1 to Q Recognises the long run profit will be normal but not that $TR/AR = TC/AC$. Recognises there is no more incentive for other firms to join the market. This is Excellence evidence and used as alternative evidence for Merit. <p>This candidate gave 2/3 detailed explanations for the short run at Merit level.</p>		
2	M6	<p>Part (a)</p> <ul style="list-style-type: none"> Correct graphing of profit maximising price and quantity <p>Part (b)</p> <ul style="list-style-type: none"> Correct graphing of average cost pricing price and quantity Correctly identifies the average cost pricing will cause a drop in price and increase in quantity but does not explain how this can cause an increase in consumer surplus as needed for Merit/Excellence evidence Correctly explains the change in profit from supernormal to normal with the merit evidence that now $AC=AR$ Correctly explains the average cost pricing will be a more allocatively efficient outcome by showing the decreased DWL and increased net surplus. <p>This candidate gave 2 responses at Merit level.</p>		

3	M5	<p>Part (a)</p> <ul style="list-style-type: none"> • Correctly moves the MC to the left and draws the resulting reduced quantity and increased price <p>Part (b)</p> <ul style="list-style-type: none"> • Correctly uses marginal analysis to explain the change in output and price after the increase in labour costs <p>Part (c)</p> <ul style="list-style-type: none"> • Correctly drew the AC curve above AR and turning on the MC curve • Correctly recognised the monopoly will have to leave the market in the long term, but does not identify shut down occurs at $AC > AR$ or $TC > TR$, preventing this from moving to a Merit response. • Correctly identifies the monopoly has strong barriers to entry but does not identify any such barriers, preventing this from moving to a Merit response. • Recognises the monopoly operates at profit maximisation but does not use this to explain that is why price and quantity will remain unchanged. <p>This candidate gave a merit response for one part, Part b, gaining a Merit level.</p>
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