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NZQA | Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

Level 3 Economics 2025

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 2–16 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.

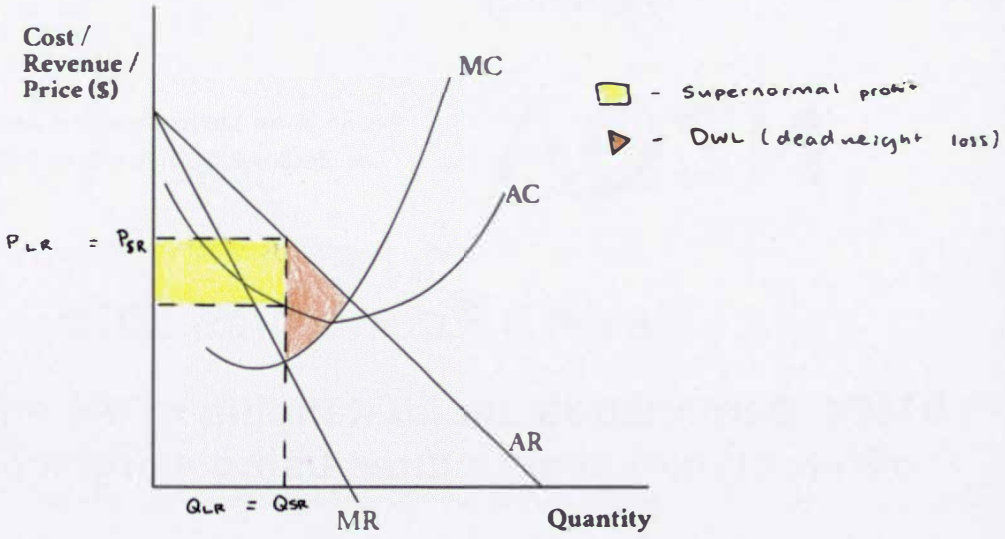
YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

Excellence

TOTAL 24

QUESTION ONE: Monopoly

Graph One: A Monopoly in the short and long run



(a) (i) On Graph One above:

- identify the short run profit maximising price (P_{SR}) and quantity (Q_{SR})
- shade and label the type of profit
- shade and label the deadweight loss
- identify the long run profit maximising price (P_{LR}) and quantity (Q_{LR}).

(ii) Explain the short and long run price, output, and profit positions of a monopoly. In your answer, refer to Graph One and the key characteristics of a monopoly.

In the short run the monopoly is making supernormal profits (yellow box) as average cost (ac) is less than average revenue (AR) (AC < AR) therefore total revenue is greater than total cost the monopoly is making more than sufficient to stay in the industry.

A Monopoly is a price maker and can reduce quantity to increase price or decrease price to sell more quantity. The monopoly will chose to profit maximise where MR = MC at this point price is P_{SR} & quantity is Q_{SR}. At P_{SR} AR > AC so a supernormal profit is being generated.

In the long run the monopoly will continue to generate

supernormal profits as a monopoly market has high barriers to entry that prevent other firms from joining the market to take advantage of the supernormal profits & increase market suppy. Therefore, profit maximisation point stays where MC = MR at this point price is $P_{LR} = R_{SR}$ and quantity is $Q_{LR} = Q_{SR}$. So the supernormal profit is maintained in the long run.

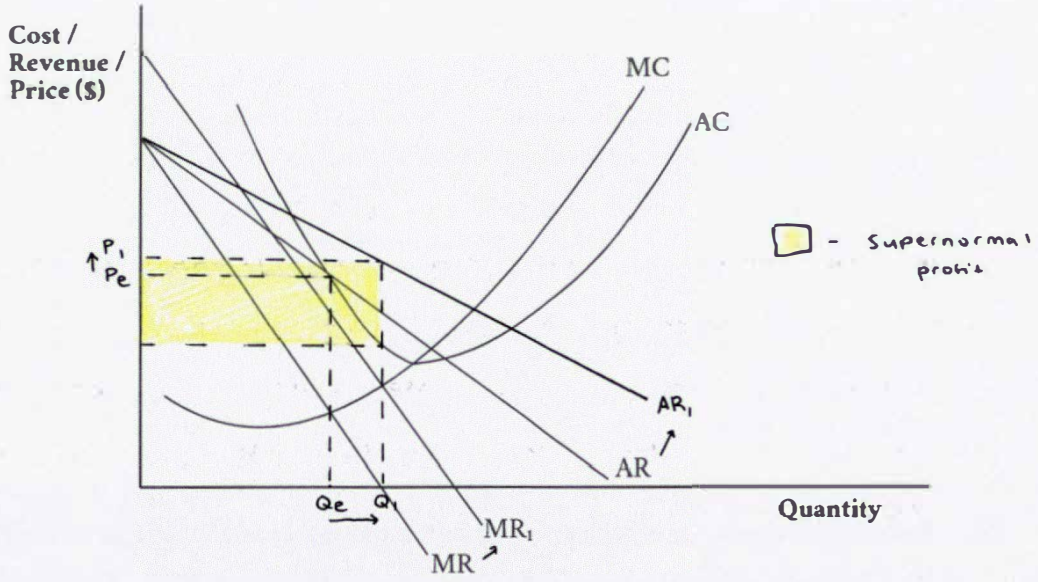
(iii) Referring to Graph One, explain whether the monopoly is allocatively efficient.

The monopoly is not allocatively efficient as it operates at MC = MR therefore not supply = demand. The market is not operating at equilibrium therefore total consumer & producer surplus are not maximised creating a dead weight loss ~~of~~ (orange triangle). There is a ~~decrease in~~ loss of social net welfare as a result. Because the monopoly will profit maximise it will operate at MC = MR. At this point quantity supplied is not at the socially desirable level so there is a DWL.

Question continues on the next page ➤

social net welfare loss

Graph Two: A monopoly before and after an increase in demand



Demand increases for the monopoly. This increase is indicated by MR_1 on Graph Two above.

(b) (i) On Graph Two above, identify the profit maximising price (Pe) and quantity (Qe) before the increase in demand.

(ii) Complete Graph Two above for after the increase in demand by:

- adding a new AR curve (label AR_1)
- identifying the new profit maximising price (P_1) and quantity (Q_1)
- shading and labelling the type of profit.

(iii) Referring to Graph Two above, use marginal analysis to explain the profit maximising output of the monopoly following the increase in demand.

The increase in demand causes both marginal revenue (MR) & Average revenue (AR) curves to proportionally shift to the right from MR → MR_1 & AR → AR_1. At Qe MR_1 is greater than MC meaning the additional revenue gained from producing the last unit is greater than the additional cost. Therefore the monopoly will increase output to take advantage of marginal profits avaliable betweeen Qe → Q_1. At Q_1 MR_1 = MC & the monopoly is profit maximising.

(iv) Referring to Graph Two on page 4, explain the type of profit made before and after the increase in demand, and how the monopoly will respond to any change in profit levels.

Before the increase in demand the monopoly is profit maximising where MC = MR at this point price is Pe and quantity is Qe. At Pe AR = AC therefore the monopoly is making normal profits. as total cost is equal to total revenue.

In comparison to the increase in demand where the monopoly increases output from Qe → Q1 in order to profit maximise where MR1 = MC this causes price to increase from Pe → P1 at P1, AR1 is greater than AC so the monopoly is generating supernormal profits as total revenue exceeds total cost. The monopoly is a price maker so can control the price by reducing quantity or increase quantity sold by reducing the price.

The monopoly is likely to continue production in response to the supernormal profit potentially increasing or expanding.

QUESTION TWO: Perfect competition and increase in costs

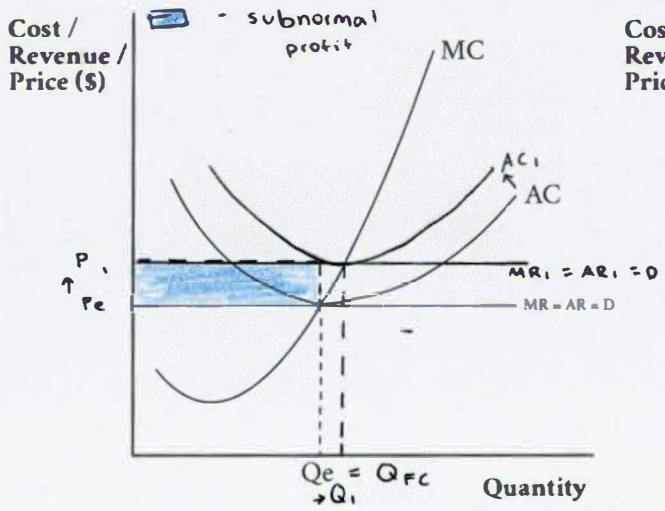
Farmers are an example of producers operating in a perfectly competitive market. Like many industries, farmers in New Zealand have been hit by rising council rates (a fixed cost) as well as rising fertiliser costs (a variable cost).

(a) (i) Referring to the resource material above, explain the difference between fixed costs and variable costs.

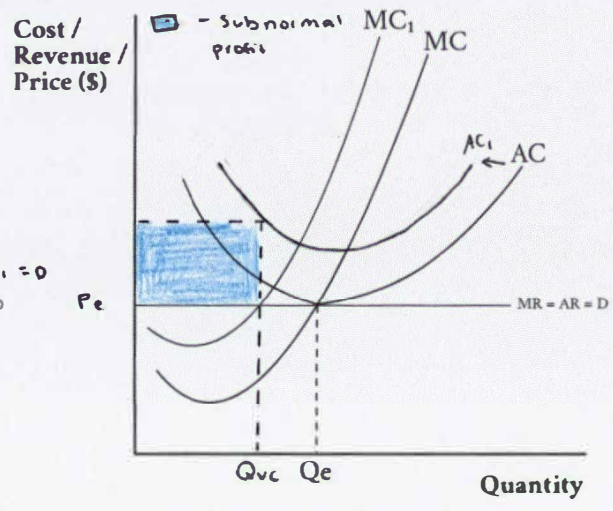
Fixed cost ~~doesn't~~ don't change with level of production and only contributes towards the total cost. Rising council rates are fixed costs as they don't change depending on how much is sold, they are a flat fee each year. Variable costs do change with the level of production & contributed towards total cost & marginal cost. Fertiliser is a variable cost as the more vegetables produced the more Fertiliser is needed.

Graph Three and Graph Four below show perfect competition experiencing increased fixed costs and variable costs respectively. Qe is the output level before any cost increase.

Graph Three: Increased fixed costs



Graph Four: Increased variable costs



(ii) On Graph Three and Graph Four above, add the AC curve (label AC_1) to reflect the increased costs.

(iii) On Graph Three and Graph Four above, show the short run profit maximising (or loss minimising) output (label Q_{FC} and Q_{VC} respectively), price (label Pe), and the type of profit (shade and label) following the increased fixed costs and variable costs.

(iv) Explain any difference in the short run profit maximising output for the perfect competitor (farmer) following an increase in fixed costs compared to an increase in variable costs.
In your answer, refer to:

- the cost curve shifts on Graph Three and Graph Four
- your answer to (a)(i) on page 6.

In the short-run both an increase in fixed cost & variable cost result in a subnormal profit as AC > AR.

The increase in fixed cost only affects the AC curve as fixed costs only impact total cost as it doesn't change depending on production. So AC → AC$_1$. There is no change to MC and firms in a perfectly competitive market are price takers so in the short run price remains at Pe. At profit maximisation MC = MR, AC$_1$ > AR so a subnormal profit is being made (blue box) as total cost is greater than total revenue in the short run. Output stays the same as $Q_{FC} = Q_e$.

The increase in variable cost causes a shift in both AC & MC curve as it impacts the cost of producing the last unit. So MC → MC$_1$ & AC → AC$_1$. As a result at Qe the monopoly is no longer profit maximising as MR < MC$_1$, As a result the monopoly will reduce output to avoid making marginal losses until Q_{VC} is reached at which profit maximisation is occuring as MR = MC$_1$. please look to additional paper

(b) (i) On Graph Three on page 6, show the perfect competitor's long run profit maximising:

- output (label Q_1)
- price (label P_1).

Question continues on the next page ➤

(ii) Compare and contrast the short and long run profit maximising positions for the perfect competitor following an increase in fixed costs.
In your answer, refer to:

- Graph Three and the resource material on page 6
- the characteristics of perfect competition
- marginal analysis
- output, price, and profit.

In the short run the firm is making a subnormal profit (blue box) as Average revenue is less than Average cost so making insufficient returns to stay in the industry. As price remains at Pe in short term as firms ~~or~~ in a perfectly competitive market are price takers so accept the given price. In the long run firms will leave the market as better returns can be generated in other markets. This will cause a decrease in market supply causing price to increase as demand for the limited supply increases.

Price then increases for the firm as they are a price taker & can't influence the market from Pe → P_1 as well as and increase to MR = AR = D → $MR_1 = AR_1 = D_1$. At Pe MR_1 > (greater) MC so the firm will increase output to take advantage of marginal profits until Q_1 is reached at which point profit maximisation is occuring as $MR_1 = MC$ at this point P_1 ~~=~~ $AR_1 = AC_1$ so normal profits are being generated. There is now no longer any incentive to leave or join the market as the firm is making sufficient returns as total revenue = total cost.

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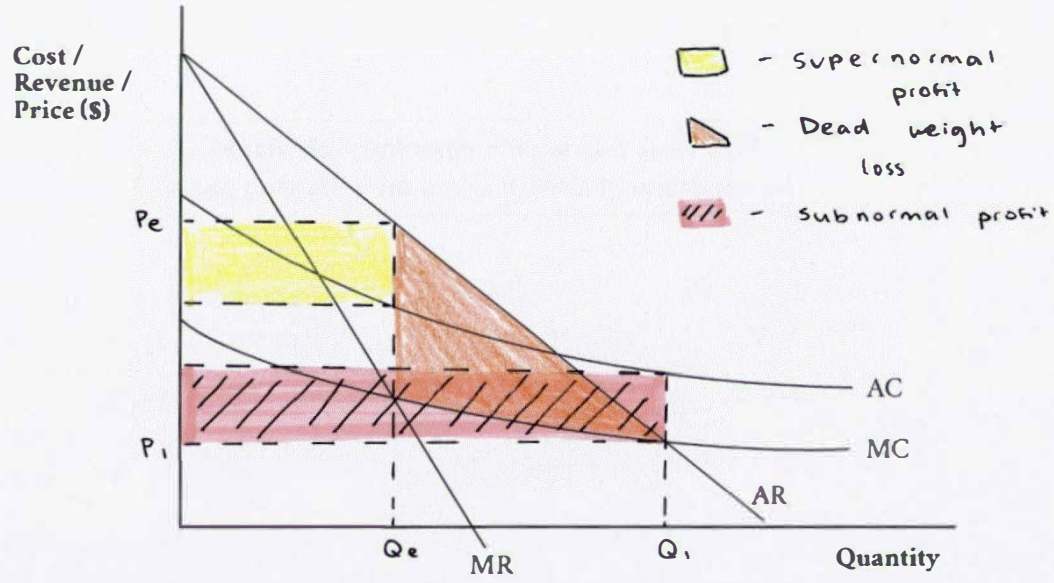
QUESTION THREE: Natural monopoly

Unregulated natural monopolies, unchecked by competition, tend to inflate prices and restrict output. This maximises their profit, but leaves consumers paying more for less, undermining essential service availability.

Graph Five: Natural monopoly



(a) (i) On Graph Five above:

- identify and label the profit maximising price (Pe), and quantity (Qe)
- shade and label the type of profit made
- shade and label the deadweight loss caused by the natural monopoly producing at profit maximising level.

In industries where there are significant economies of scale, such as electricity grids, water supply, or pipeline networks, duplicating infrastructure networks would be expensive and wasteful.

(ii) Explain why the Government might not encourage competition, despite the inefficiencies the natural monopoly creates.
In your answer, refer to the characteristics of a natural monopoly, Graph Five, and the resource material above.

Natural monopolies can take advantage of economies of scale due to the high set up costs but low and adding customers costs to continuing producing. A monopoly can more effectively and cheaper provide the market than 2 or more ~~for~~ firms. This is due to the high fixed costs which can be spread over a larger

number of users ^ as people join this is why the natural monopoly graph has a dawnward sloping AC curve because as additional quantity is produced fixed costs are spread over a larger number of units. (economies of scale) Natural monopolies have high set up costs it is inefficient for another firm to spend the same to set up another firm as it wastes resources. Because of economies of scale the monopoly can provide the market more effectively & at a cheaper price than 2 or more. firms. This is why the government might not encourage competition.

Question continues on the next page ➤

(iii) Explain why the unregulated natural monopoly might choose to produce at the output level of Qe.
In your answer, refer to Graph Five on page 10 and marginal analysis.

Qe is where profit maximisation occurs as MC = MR. Below Qe MR is greater than MC so the additional revenue gained from producing the last unit is greater than the additional cost so to take ~~adv~~ advantage of marginal profits the monopoly will increase output to Qe.

Above Qe MR is less than MC so the additional cost from producing the last unit is greater than the additional revenue so marginal losses are being made to avoid marginal losses the monopoly will reduce output to Qe.

Monopoly is a price maker and can increase price by reducing quantity or increase quantity sold by reducing price.

To keep essential services accessible, the Government could use price controls on natural monopolies. This prevents excessive price increases, ensuring basic utilities remain affordable for all consumers. Marginal cost pricing is one possible price control used to regulate natural monopolies.

(b) (i) On Graph Five on page 10, show the impact of a regulated natural monopoly operating under marginal cost pricing by:

- identifying and labelling the new price (P_1), and quantity (Q_1)
- shading and labelling the type of profit made.

(ii) Compare and contrast the price and profit positions of the regulated and unregulated natural monopoly.
In your answer, refer to Graph Five and explain how the prices are set, and the impact on the natural monopoly and its long term viability.

At profit maximisation MR = MC at this point price is set at P_e, at P_e a supernormal profit is being generated as Average revenue is greater than average cost (yellow box). So total revenue is greater than total cost
The monopoly is making more than sufficient to stay in the industry into the long term.

At marginal cost pricing (where marginal cost intersects average revenue) MC = AR at this point price is P_1 at P_1 a subnormal profit is generated (pink strip box) as average cost is greater than average revenue so total cost exceeds total revenue. This is insufficient to continue into the long term in the industry as the monopoly is not making enough returns. The monopoly will have to leave the industry in the long term. unless subsidiesed.

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

QUESTION NUMBER

2 ~~(iv)~~ price remains at Pe in the Short run as firms in a perfectly competitive market are price takers so accept the market price.

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2 (iv) Fixed costs only impact the average cost curve so AC → AC$_1$.
There is no change to MC as only total cost increases.
In the short run the increased fixed costs won't impact quantity supplied as firms in a perfectly competitive firm are price takers so price remains at Pe. The price curve also ~~pce~~ represents MR therefore at Qe the monopoly is still profit maximising as MC = MR therefore output remains at Qe. So QFC = Qe

In comparison to an increase in variable costs which cause a shift in both~~e~~ the average cost curve and marginal cost curve as variable costs impact the cost of producing the last unit. So AC → AC$_1$ & MC → MC$_1$. As a result at Qe the monopoly is no longer profit maximising as MR is less than MC$_1$ so the monopoly is making marginal losses to avoid additional marginal losses the monopoly will reduce out put until Qvc is reached at which point MR = MC$_1$. Price remains at Pe as firms in a perfectly competitive market are price takers so in the short run price remains at Pe. At the new quantity Qvc profit maximisation is occuring as MR = MC$_1$.

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QUESTION NUMBER

Extra space if required.
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QUESTION NUMBER

91400

Excellence

Subject: Economics

Standard: 91400

Total score: 24

Q	Grade score	Marker commentary
One	E8	The candidate: • made accurate changes and added specific labels to the graph • explained why the monopoly's short run and long run price, output, and profit are the same by referring to key characteristics of monopoly and specific labels from the graph • gave valid reasons when explaining why the monopoly is not allocatively efficient • used marginal analysis fully to explain why the output increases to Q1 after the increase in demand, including MR>MC, missing marginal profits, and increase output to Q_1 which is profit maximisation at MC=MR • explained the monopoly makes a normal profit (AR=AC) before and supernormal profit (AR>AC) after the increase in demand and that in both instances the monopoly will stay in the industry as it is making sufficient and more than sufficient return.
Two	E8	The candidate: • made accurate changes and added specific labels to the graph • explained the reasons for the cost curve shifts, referred to specific labels from Graphs Three and Four, and gave valid reasons for the output not changing when fixed costs increase while output decreases when variable costs increase • explained the reasons for the perfect competitor's profit going from subnormal to normal profit, price increasing, and output increasing by referring to the key characteristics of perfect competition and marginal analysis. The candidate has also referred to specific labels from Graph Three.
Three	E8	The candidate referred to the multiple characteristics of a natural monopoly (NM) to explain why it can supply to the entire market at lower prices than if there were two or more firms. They explained how economies of scale can be achieved, reflected by the downward sloping AC curve and that this enables the NM to sell at lower prices (than if there were other firms competing). This has been done in context, referring to the graph and resource material They used marginal analysis fully to explain why the unregulated monopoly produces output level Qe. This includes stating that if the monopoly produced less than Qe, its MR>MC, it would be missing marginal profits, and if it increased output to Qe which is profit maximisation at MR=MC it would be making maximum profit. The candidate also explained that if the monopoly produced more than Qe, its MC>MR, it would be making marginal losses, and if it decreased output to Q, which is profit maximisation at MR=MC, it would be making maximum profit.