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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.

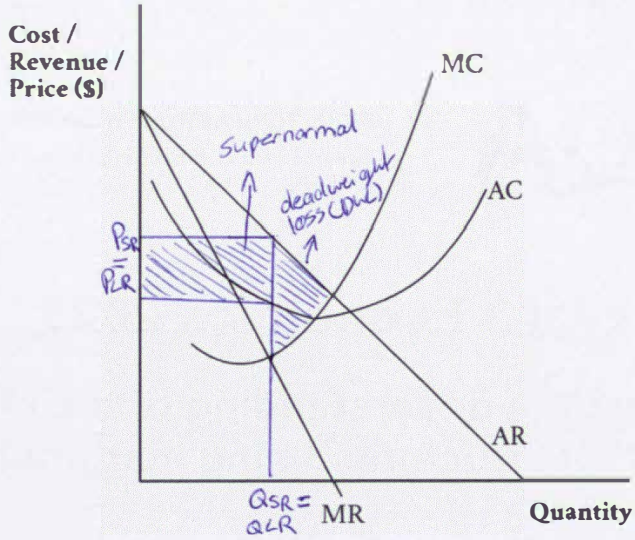
YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

Merit

TOTAL 18

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.

A monopoly is the sole seller of a product because a single firm owns the resources or has the exclusive right (e.g. patents). In both the short and long term, a monopoly makes supernormal profit because it is a price maker and can set a higher price as it is the sole seller of the product. Due to high barriers to entry, other firms cannot enter the market even if they are attracted by the supernormal profit, meaning the monopoly continues to make supernormal profit in the long run. Therefore, $Q_{SR} = Q_{LR}$, and $P_{SR} = P_{LR}$.

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

The monopoly is allocatively inefficient as it operates with excess capacity. Unlike perfectly competitive firms, the monopoly maximises profit where MR=MC, and not where MR=AR=MC. This means that MC ≠ AR or S ≠ D. The monopoly cannot produce where at the socially optimal level without making a loss, so it produces at MR=MC instead. Due to this, the value consumers place on the last unit produced is greater than the cost of the resources needed to make that unit (P>MC). This means the monopoly is underproducing and overpricing relative to the social optimum, making it allocatively inefficient. This is reflected in the DWL and because P≠MC, meaning total surplus

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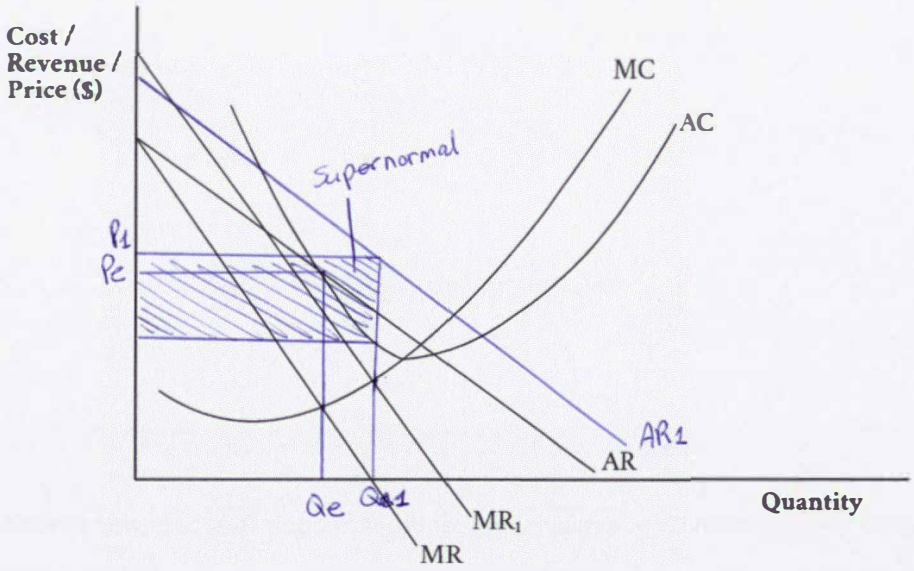
Graph Two: A monopoly before and after an increase in demand



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 profit maximising output of the monopoly following the increase in demand is at output level Q1, P1, as the increase in demand has shifted the MR and AR curves to the right (MR1 and AR1 respectively). Operating at the previous output level would mean MC < MR, meaning the firm would miss out on potential revenue by underproducing at Qe instead of increasing to Q1. Remaining at the previous output level of Qe, Pe, after the increase in demand shifts the MR curve to the right to MR1, the firm would not be maximising profit as MC ≠ MR. Therefore, following the increase in demand, the firm should increase output to Q1, P1, where MR1 = MC; the new profit maximising output level.

(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 made normal profit and after the increase, it made supernormal profit. If the monopoly is making normal profit, it will continue to operate as it will break even and have enough to cover the costs of staying in the market, so there is no incentive to leave. Following the increase in demand, the monopoly makes supernormal profit as it charges the highest price consumers are willing to pay. They can do this because they are the sole sellers and have significant market power, making them price makers. If a monopoly was making subnormal profit, it would stop producing and but would only be able to leave the industry in the long run as it faces high barriers to entry/exit, and in the short-run, they are tied-in because some factors of production are fixed, so they cannot immediately leave.

QUESTION TWO: Perfect competition and increase in costs

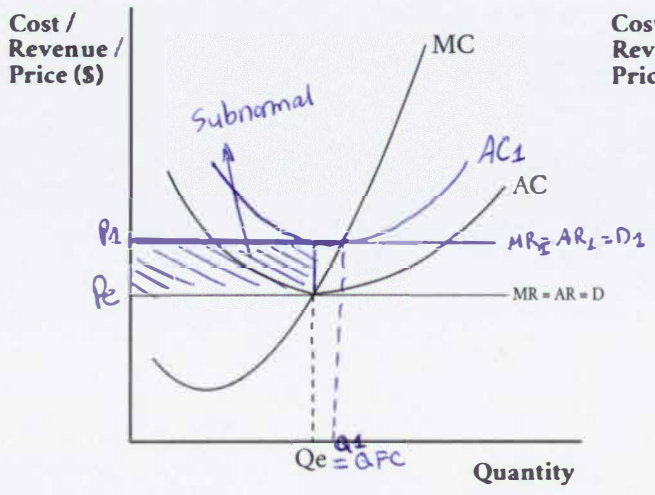
Farmers are an example of producers operating in a perfectly competitive market. Like many industries, farmers in New Zealand have been hit by rising council rates (a fixed cost) as well as rising fertiliser costs (a variable cost).

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

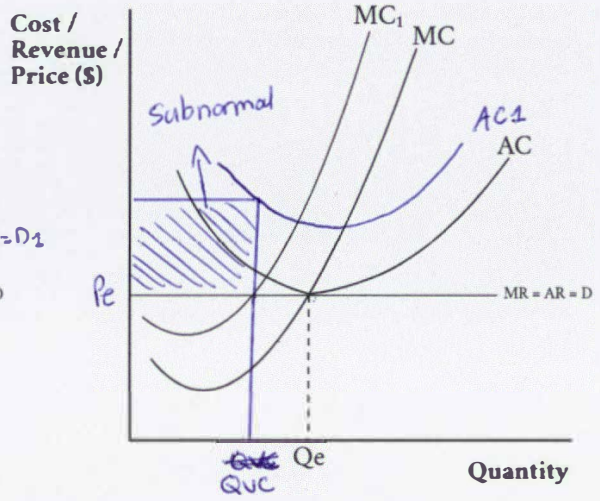
Fixed costs are independant of output levels and do not change. Despite the farmers' production level, they will have to pay the rising council rates regardless. Variable costs are dependant on output levels and can change depending on the amount that is being produced. For example, farmers will face a higher variable cost if they increase production, as they will need more Fertiliser.

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.

An increase in Fixed costs will only shift the AC curve from AC to AC1, and the increase in variable costs on graph 4 shifts the MC curve to left to MC1, and shifts the AC curve left to AC1. Fixed costs only impact AC because they are independant of output, while variable costs shift MC and AC because it does depend on output levels. The short-run profit maximising output level for the increase in Fixed costs remains at Qe (Qe = Q FC) because it does not impact the firms output level. The increased variable costs has decreased the output level from Qe to Qvc because the increase in variable costs, such as fertilizer, means the cost of producing additional units becomes more expensive, so farmers reduce their output from Qe to Qvc. In both situations, subnormal profit is made in the short-run. loss making firms will exit the market as there are no barriers to entry/exit, and the remaining firms will increase price to cover costs, returning to normal profit.

(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 increase in fixed costs in the form of rising council rates for farmers leads to subnormal profit at the profit maximising output level of Qe=QFC, Pe. Due to the subnormal profit/ loss, loss making firms will exit the industry as perfect competition has free entry/exit, and the overall market supply will decrease. The remaining firms in the industry will increase supply and price will rise to cover the costs, returning to normal profit in the long run. This is shown by the long run profit maximising output level of Q1, and the increase in price from Pe to P1. At the new, long-run profit maximising output level, the firm is making normal profit.

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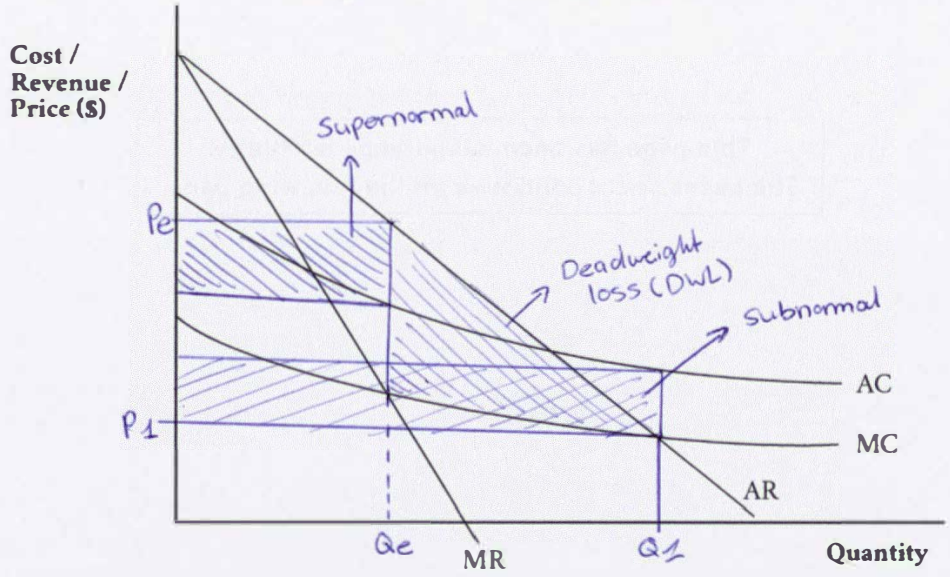
QUESTION THREE: Natural monopoly

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.

A Natural monopoly is capable of supplying the entire market at a lower cost than multiple firms. This is because of high set-up costs and barriers to entry and economies of scale. Despite the inefficiencies of a natural monopoly, the government might not encarage competition because it is more efficient to have one large producer supplying the entire market at a lower cost than if two or more firms competed, leading to higher

average costs for each firm and leading to all firms being unable to fully exploit economies of scale. Encouraging competition would also mean wasteful duplication of resources and greater levels of inefficiency than the government allowing the natural monopoly to operate at its profit maximising output level.

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(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.

The unregulated natural monopoly would choose to produce at the output level of Qe because that is where MR=MC. Operating at a lower output level would mean MC $\leq$ MR, meaning the firm is missing out on potential revenue by underproducing. Similarly, producing above Qe would mean MC>MR, meaning the firm is making a loss by producing more. Output level Qe is where MR=MC, meaning the firm is able to maximise profit at this output level. As the sole seller with significant market power and high barriers to entry, the natural monopoly can set a higher price of Pe and make supernormal profit while still operating at the profit maximising output level of Qe, where MR=MC.

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.

The regulated monopoly is making subnormal profit as the marginal cost pricing forces it to operate where MC=AR, or supply equals demand (S=D). This means P=MC, as the value consumers place on the last unit produced equals the marginal cost to make that unit. However, the monopoly is unable to maximise profit as it cannot set the highest price consumers are willing to pay, as it did at Pe when unregulated. This means that producer surplus decreases, as the shrinkage between ~~the~~ the price producers are willing to recieve and actually recieve has reduced, and is not offset by the increase in units sold from Qe to Q1, as the recieve a much lower price. In the long term, the natural monopoly will have to leave the industry as it is making subnormal profit. Additionally, the govt. will have to provide a subsidy for the natural monopoly to continue operating in the long-term, as the deadweight loss incurred from the firm leaving the industry is greater than the deadweight loss of allowing it to stay unregulated and operate at its profit max. output level of Pe, Qe.

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Write the question number(s) if applicable.

QUESTION NUMBER

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QUESTION NUMBER

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QUESTION NUMBER

91400

Merit

Subject: Economics

Standard: 91400

Total score: 18

Q	Grade score	Marker commentary
One	M6	The candidate: • showed the correct labelling and shadings on the graph and referred to specific labels from the graph in their explanations • explained the monopoly makes supernormal profit in the short run and the long run and referred to characteristics of monopoly in their explanation. They have also explained that the short and long run price and output are the same • used nearly all aspects of the concept of marginal analysis to explain why the output increases to Q_1. To gain an E7 grade or better would require the candidate to correctly refer to the characteristic of monopoly as a price maker where it controls either the price or output (and not both). The marginal analysis explanation would be accurate in that it would refer to missing marginal profits (not potential revenue).
Two	M6	The candidate: • explained what fixed costs and variable costs are and used a relevant example of each to explain what independent of output and dependent on output mean respectively • correctly made changes to, shaded, and labelled both graphs • explained the reasons for the perfect competitor's price increasing by referring to the key characteristics of perfect competition, with reference to specific labels from the graph. To gain an E7 grade or better would require the candidate to include in their explanation in (a)(iv), that the MC curve does not shift when FC increases because an increase in FC does not affect the cost of producing an additional unit. Therefore, the output remains unchanged at Qe=QFC because the MC curve hasn't shifted (and profit maximisation of MC=MR is still the same).
Three	M6	The candidate referred to multiple characteristics of natural monopoly to explain why the Government might not encourage competition and used aspects of the concept of marginal analysis to explain why the unregulated monopoly would produce at output Qe. To gain an E7 grade or better would require the candidate to explain how economies of scale can be achieved, linked to how the natural monopoly is able to sell at lower prices than if there were two or more firms. This would be done by referring to the downward sloping AC curve and explaining in context (referring to the graph and resource material). Marginal analysis would be used correctly to fully explain the profit maximising output level of Qe for the unregulated monopoly.