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NZQA | 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.

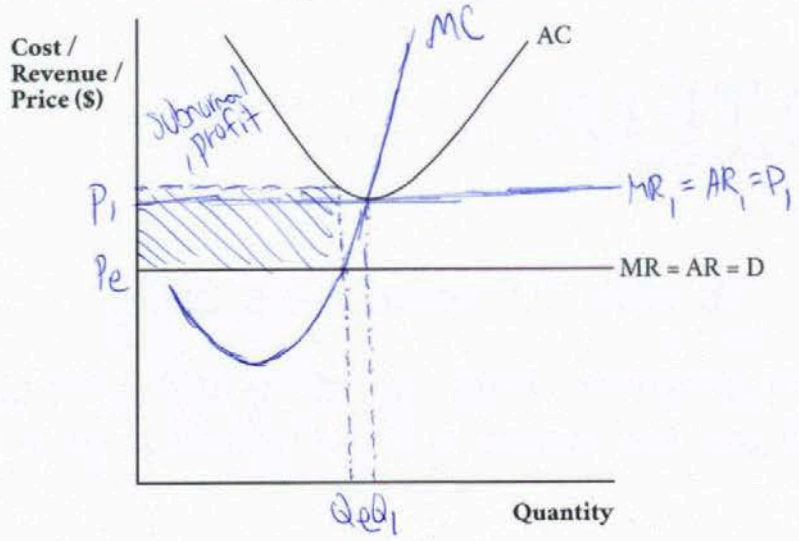
Merit

TOTAL 18

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.

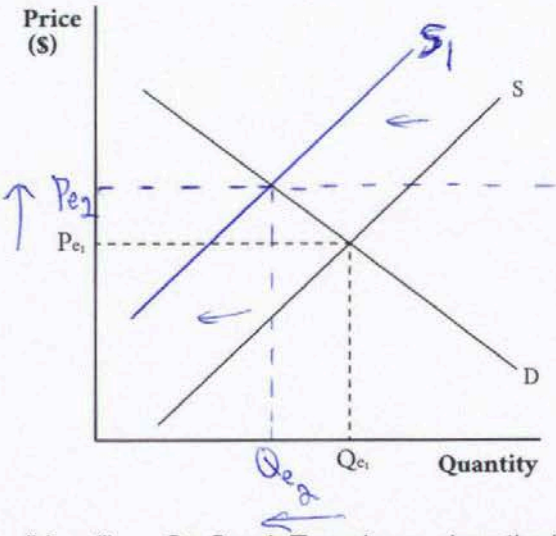
In perfect competition, all products are homogenous due to low barriers to entry and exit. In the short run, at Q_e, AR<AC so the firms perfect competition will have total costs greater than total revenue or a subnormal profit. This is below the sufficient revenue to ~~cost~~ cover economic costs of production so in the long run, firms in perfect competition will leave the market (easily due due to low barriers to exit).

As firms leave, scarcity increases which means that the supply of product will decrease. This decrease in supply will lead to the price increasing until a normal profit is made (AC=AR) and firms will stop leaving the market as there is now no incentive to leave the market.

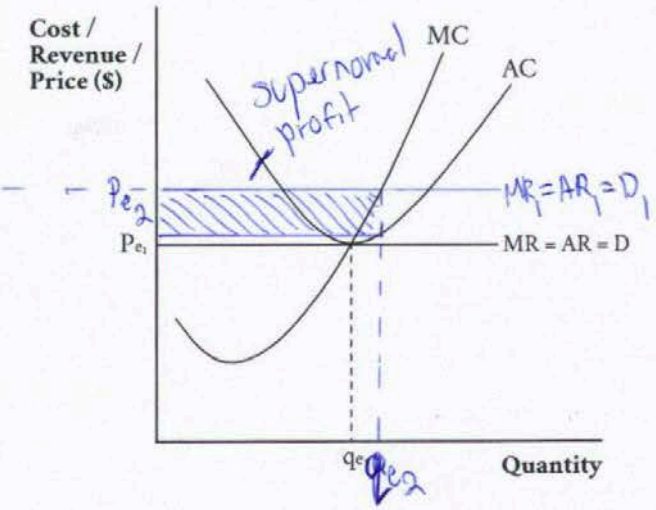
As firms in perfect competition are price takers and too small to influence price, they will accept new price and subsequently increase MR=AR=D to $MR_1=AR_1=D_1$. At the original quantity supplied, MR > MC so the firm will be missing out on marginal profits. Subsequently, quantity supplied by firm will increase to Q_1 where MC = MR and profits are being maximised. At Q_1, AC=AR So the ~~firm~~ perfect competitor is making 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.

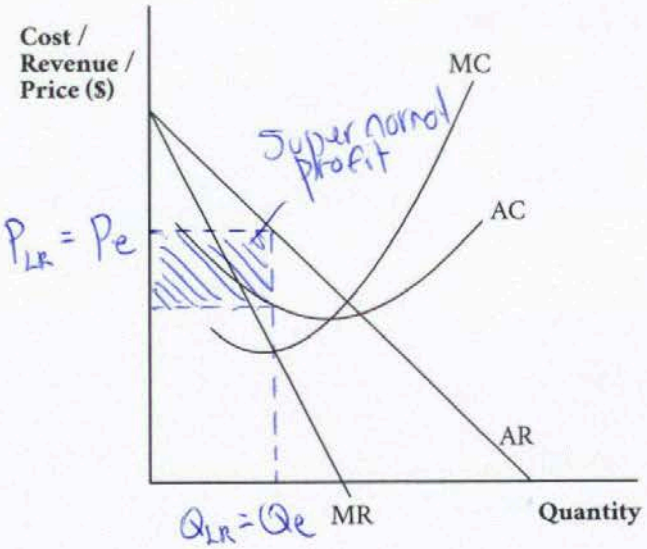
(c) Referring to Graph Two, Graph Three, and the resource material above, compare and contrast the impact of the severe weather events on the market and the perfect competition firm. In your answer, explain in detail why the market quantity decreases while the firm's output increases.

Due to the severe weather events, some firms have had to close down business. As firms have to close down business, scarcity of product will increase due to quantity ~~produced~~ supplied decreasing (homogenous products as market has low barriers to entry & exit). As quantity supplied decreases, supply curve

Shifts to the left. At original price of P_{e_1}, there is now a shortage as the quantity applied is less than quantity demanded (Q_{e_1}). Consumers will bid up price not to miss out. As price increases, product firms in perfect competition supply will become more unaffordable and consumers will reduce their quantity (market quantity) demanded (opt out). ~~This will~~ However, as price goes up firms production increases as selling product becomes more profitable. Individual firms in perfect competition are price takers so they (too small to influence market price) so ~~price~~ MR=AR=D shifts up to $MR_1=AR_1=D_1$. At ~~new~~ original quantity supplied, individual firm has MR>MC so they are missing out on marginal profits. To maximize profits they will increase production until MC=MR at q_{e_2}.

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: Super normal
- long run: Super normal

(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.

A monopoly is in a market with high barriers to entry. Despite the incentivising supernormal profits (short run) the monopolist makes, competitors cannot easily enter the market monopolist is in. In the short run, monopolist makes a supernormal profit. At Qe, AR is greater than AC so supernormal profit for monopolist.

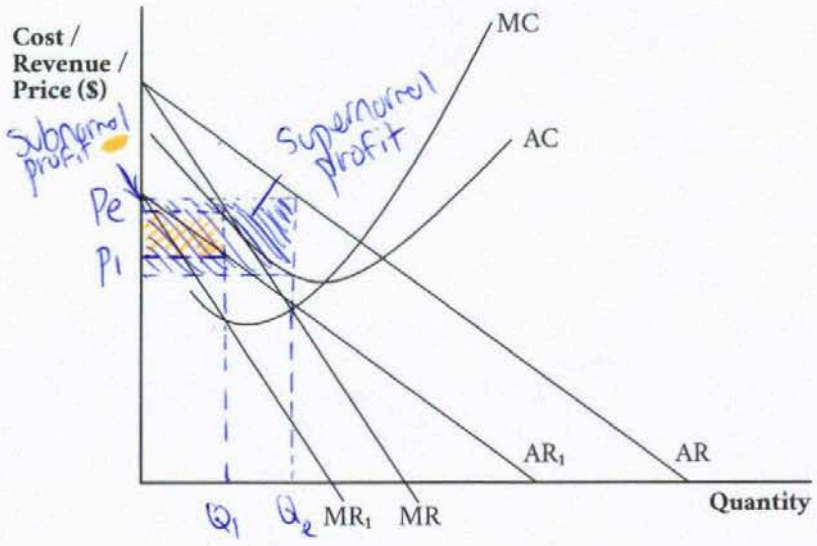
~~In the long run~~ To maximise profits, monopolist produces at Q_e because MC = MR at this quantity. If monopolist were to produce at a quantity lower than Q_e, they would be missing out on marginal profits. A quantity supplied higher than Q_e would result in monopoly making marginal losses so they would need to lower quantity supplied to minimise loss. MC=MR equals profit maximising point so monopoly will produce this quantity in short run. As explained before, high barriers to entry means that no firms will be able to take a market share of monopolist's industry so the output and price will remain the same for monopolist in long run ($P_{LR} = P_e$ and $Q_{LR} = Q_e$ as shown on graph). This will result in monopolist maintaining the supernormal profit they make in the long run

Increase Qs

(High barriers to entry prevent price from decreasing due to competition)

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.

In the monopoly's initial situation, it earns a supernormal profit. At the price maximising output (MC=MR), AR is greater than average costs so the monopoly makes a supernormal profit. This is more than sufficient to keep monopolist operating. As quantity demanded falls the firm will need to decrease their supply (from Qe to Q1) due to falling demand shifting AR=D curve to

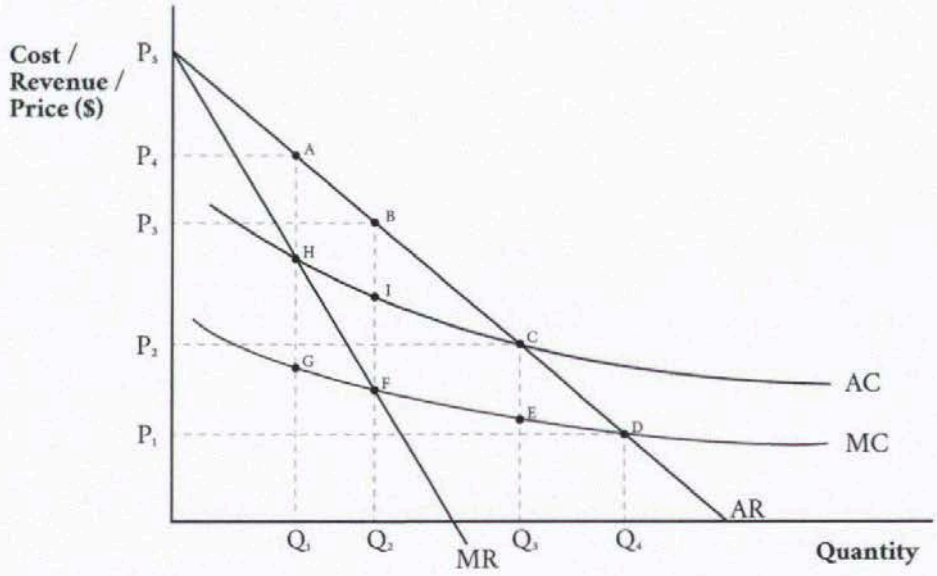
To minimize loss

the left, which will also shift MR curve to the left as MR bisects AR. As at original quantity, ~~Qor~~ MC > MR$_1$, the firm will be making marginal losses ~~so~~ will decrease the quantity they produce to Q_1 where MC = MR$_1$. At Q_1, however, AC are greater than AR (AR_1) so the total ~~costs of~~ economic costs of running monopoly are greater than the total revenue. This will result in ~~shaded~~ subnormal profit. Price ~~of~~ will decrease as AR=D curve has shifted left(~~be~~ to P_1).
In the long run, subnormal profit will incentivise the monopoly to cease production or leave the market (threaten survival) as they will be losing money

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, P_3, B	P_5, P_2, C	P_5, P_1, D
Deadweight loss (if any)	B, F, D	C, E, D	None

(ii) State the type of profit made under:

- profit maximising: Super normal
- 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.

Consumers are best off with pricing option of Marginal cost pricing whilst being worst off with profit maximising pricing (Average cost inbetween). MC pricing will lead to consumers being best off as it provides them the greatest surplus (P_5, P_1, D). The price they pay (P_1) is less than the price at profit maximising (P_3) and average cost pricing (P_2). This means the gap between what consumers are willing to pay for good or service ~~is much less than~~ increases more with MC cost pricing than profit maximising or Average cost pricing. Profit maximising price results in smallest gap between what consumers are willing to pay and what they actually pay. Marginal cost pricing also allows consumers to purchase the largest quantity (Q_4) so the number of units consumers can gain surplus on is the greatest with MC pricing. Profit maximising has least quantity supplied for consumers so consumers have less units to gain surplus from when compared to AC cost pricing and MC cost pricing.
As a result, MC cost pricing will lead to consumers being best off and profit maximising output will lead to consumers being worst off.

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 most efficient outcome is the Marginal cost pricing while least efficient outcome is the profit maximising output. With MC pricing, the market is operating at allocatively efficiency. This is because market supply (MC) equals market demand (AR=D) (Natural monopolist only seller in market). This will lead to no DWL in the market and sum of producer and consumer surplus will be maximised at P_1, Q_4. Profit maximising output will lead to least efficient outcome as it operates where AR > AC or market supply is far less than demand. This leads to DWL being in the market represented by DWL of B, F, D. Sum of consumer and producer surplus is not maximised and market will least efficient with P max output. AC pricing smaller DWL than p_{max} of CED. Relatively more efficient than p_{max} but less than MC cost.

(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 natural monopolist will make a supernormal profit under profit maximising a normal profit under Average cost pricing and a subnormal profit under marginal cost pricing. With profit maximising output, natural monopolist operates at Q_2 quantity or where MC = MR. Beyond this quantity, natural monopolist makes marginal losses while before this quantity, natural monopolist could be making marginal profits. At Q_2, AC < AR so Q_2 = MC = MR

total revenue is greater than total profits so firm (P_3) makes a supernormal profit. With AC cost pricing Natural monopolist operates at where AC = AR or when P_2 and Q_3 meet. At this price and output, average costs equal average revenue so the firm will make normal profits (TR = TC). This profit and supernormal profit are more than enough to keep firm in the industry in the long run as there is incentive to continue producing.

MC cost pricing at P_1 and Q_4 at where MC = AR has AC > AR at Q_4. This means that the total costs of the firm will be greater than total revenue. In the long run ~~firm producer~~ may leave market as there is no incentive to continue production due to unprofitability at this pricing option. The government may need to intervene by provide a subsidy or nationalise the natural monopoly to prevent it from shutting down which could be bad. This subsidy would result in decreased spending in other areas of economy for Government (opportunity cost).

Government will not need to intervene with AC cost pricing and profit maximising as revenue is sufficient to keep natural monopoly operating in even the long run.

Subject: Economics

Standard: 91400

Total score: 18

Q	Grade score	Marker commentary
One	M5	The response was awarded M5 because the candidate: • correctly shaded and labelled both graphs • used marginal analysis to explain why the output increases • explained why the perfect competition firm will earn a normal profit in the long run • referred to specific labels from the graphs. Gaining an Excellence grade would require the candidate to correctly refer to the key characteristic of perfect competition of having no barriers to exit when explaining why price increases (rather than low barriers).
Two	M6	The response was awarded M6 because the candidate: • correctly shaded and labelled both graphs • explained that a monopoly has strong barriers with the idea that other firms can be prevented from entering the market and that it will continue to operate at profit maximising at MC=MR • referred to specific labels from the graphs. To gain an E7 grade or better would require the candidate to include more than one key characteristic of monopoly, to expand on the reason why the monopoly will continue to price at P_e=PLR as it is a price maker who can set either the price or the output (not both), and provide an example of what the strong barriers might be.
Three	E7	The response was awarded E7 because the candidate: • 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 smallest • explained 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 maximised • explained the type of profit made by the natural monopoly and, to an extent, how the government would be affected • referred to specific labels from the graph or table.