3

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91400

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NZQA

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Level 3 Economics, 2016

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

2.00 p.m. Friday 25 November 2016
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 2–11 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.

Excellence

TOTAL 23

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QUESTION ONE: NATURAL MONOPOLY

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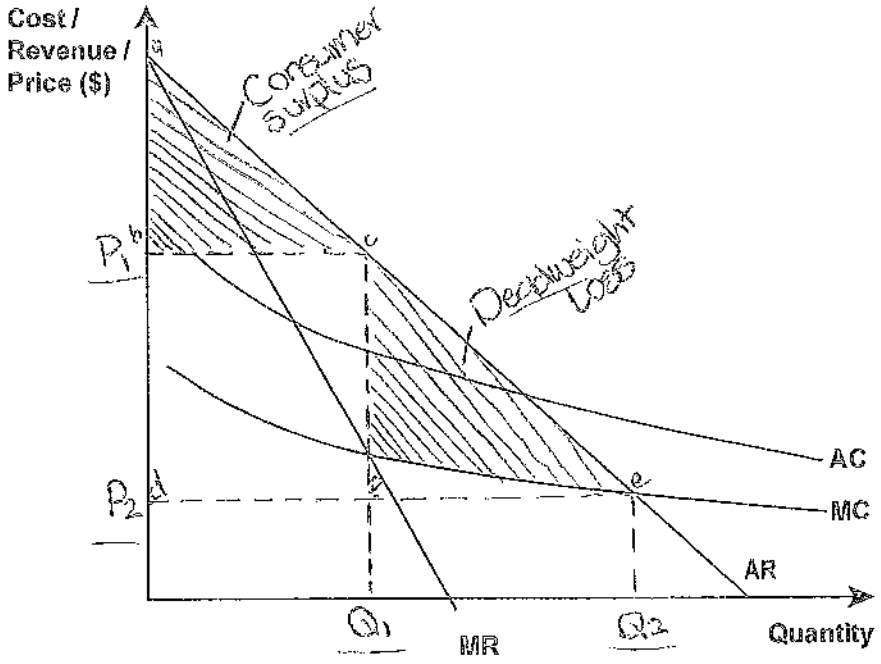
Since the mid 1990s, the New Zealand electricity industry has undergone significant reforms and deregulation. This has included splitting New Zealand's largest electricity generator into three competing generators, separating ownership of electricity lines and supply businesses, selling state-owned electricity generators, and introducing a system that enabled consumers to switch electricity retailers easily. These reforms were designed to make the electricity retail market much more competitive, giving consumers more choice and lower prices.

Source (adapted): http://www.mbie.govt.nz/info-services/sectors-industries/energy/electricity-market/electricity-industry/chronology-of-new-zealand-electricity-reform/chronology-of-nz-electricity-reform.pdf

Graph One: New Zealand retail electricity market



(a) (i) On Graph One, label the profit-maximising price (P_1) and the profit-maximising quantity (Q_1), assuming that the New Zealand retail electricity market was an example of a natural monopoly before the reforms.

(ii) Clearly shade and label the consumer surplus and deadweight loss that occurs at the profit-maximising equilibrium (P_1 and Q_1).

(iii) Label the price (P_2) and quantity (Q_2) that would result if the reforms were successful in achieving an allocatively efficient outcome in the New Zealand retail electricity market.

(b) Refer to Graph One to compare and contrast the efficiency of the two equilibriums.

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In your answer, fully explain :

- how electricity consumers would be affected by the electricity reforms if the reforms achieved an allocatively efficient outcome
- why P_2 and Q_2 would result in an allocatively efficient outcome in the New Zealand retail electricity market, in contrast to the profit-maximising equilibrium (P_1 and Q_1)
- what additional intervention could be needed by the Government at P_2 and Q_2 in the electricity market if costs for electricity retailers did not decline.

The electricity reforms would cause ~~both~~ price to decrease and quantity supplied in the electricity market to increase. At the profit maximising equilibrium of Q_1, P_1 there is a consumer surplus of abc, which is the difference between what consumers are willing to pay for a product, and the price they actually pay. Due to the electricity reforms, consumer surplus has increased to adc as the difference between what consumers are willing to pay for electricity and what they actually pay has increased. This increase in supply and decrease in price means consumers are earning a greater surplus for a greater number of units sold, therefore consumer surplus has increased, and consumers have benefited from the allocatively efficient outcome. A market is allocatively efficient when there is no deadweight loss present. A deadweight loss (DWL) is defined as a loss of welfare from one group that is not offset by gain to another. At the profit maximising equilibrium (P_1, Q_1) there is a DWL of cbe, made up of lost consumer surplus which is not gained by any other group. This means at the profit maximising equilibrium the market is not allocatively efficient. In contrast, at the social equilibrium (P_2, Q_2) there is no DWL present as both consumer and producer surplus is maximised, therefore net welfare benefit is maximised, and the market is allocatively efficient. At P_2, Q_2 the firm is making a subnormal profit which is a profit that is not sufficient enough to keep the firm in its current activity. If the government wants the firm to produce at this level they will need to subsidise the firm so they are making (at least) a normal profit, sufficient enough to keep them in their current activities.

E7

QUESTION TWO: PERFECT COMPETITION

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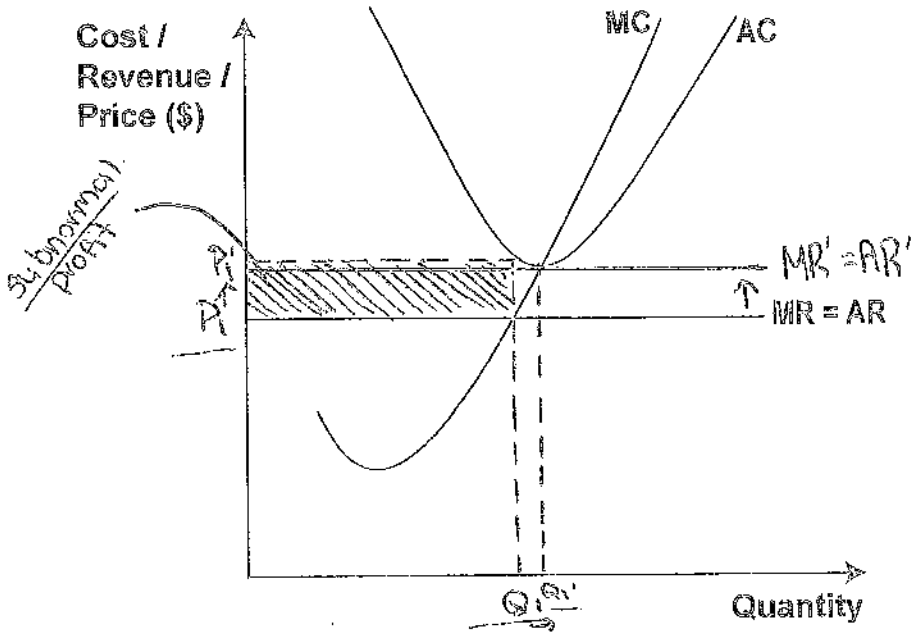
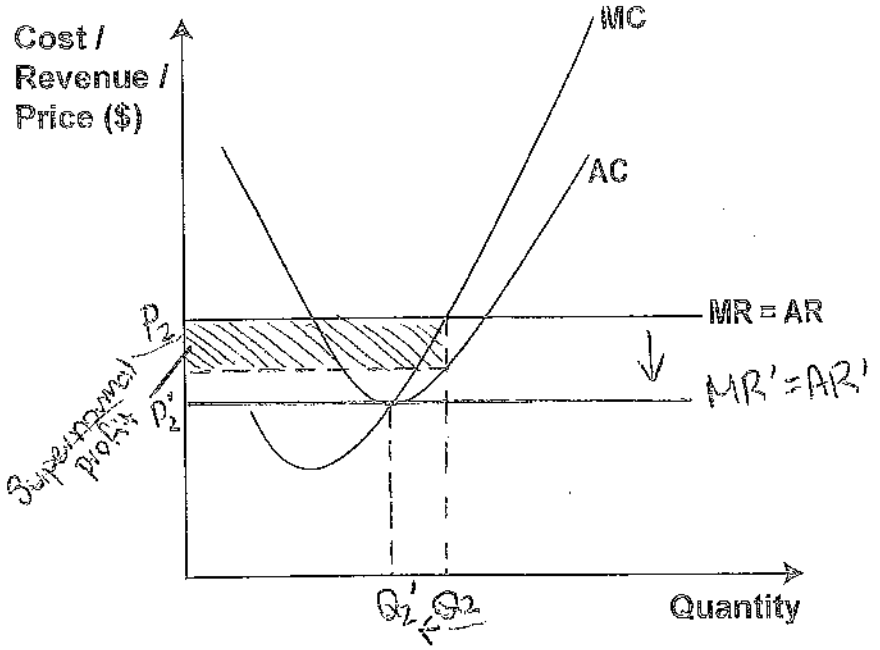
Graph Two: An individual perfectly competitive firm earning a subnormal profit in the short run



(a) (i) On Graph Two above, label the loss-minimising price (P_1) and the loss-minimising quantity (Q_1).

(ii) Clearly shade and label the subnormal profit earned by the firm in Graph Two.

Graph Three: An individual perfectly competitive firm earning a supernormal profit in the short run



(b) (i) On Graph Three above, label the profit-maximising price (P_2) and the profit-maximising quantity (Q_2).

(ii) Clearly shade and label the supernormal profit earned by the firm in Graph Three.

(c) Use marginal analysis to compare and contrast the long run situations of the firm earning subnormal profits with the firm earning supernormal profits, assuming that both firms stay in the industry.

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In your answer:

- use Graphs Two and Three to show changes in the long run to profit, price, and output
- refer to the changes in your explanation.

In the short-run, the perfect competitor on graph two is earning a subnormal profit, which is insufficient enough to keep the firm in its present activity as Total costs are greater than total revenue. Being a perfect competitor, the firm has perfect knowledge, so all firms in the industry will be aware of the subnormal profit being made, causing a large number of firms to exit the industry, which is possible as perfect competitors have no barriers to exit (or entry). ~~The decrease in firms in the industry will mean the supply in the industry will decrease (as there are less firms supplying) causing~~ creating, supply in the world market to decrease thus causing price to also decrease as a decrease in price will cause a decrease in quantity supplied (LOS). ~~As perfect competitors are price takers.~~ This decrease in firms in the industry will cause supply to also decrease (as there are less firms supplying) which consequently will cause price to increase in the market. As perfect competitors are price takers, they must produce at the market price, therefore price for graph two has increased from P1 to P1'. This causes the AR curve to shift upwards to AR', so the firm ~~sat~~ will now be earning a ~~extraordinary profit~~ normal profit as Total costs are equal to Total revenue. At the original output of Q1, the firm will be missing out on marginal profits as MR' > MC, so the firm will increase output to Q1 ~~where it takes~~ the new profit maximising output where MR' = MC. Now that the firm is making a normal profit, this will remove the incentive for more firms to exit the/

More answer space is available on the next page.

industry, so they will be making a normal profit in the long run. On graph three in the short run, the firm is making a supernormal profit, which is a profit more than sufficient enough to keep the firm in its current activity. Due to perfect competitor firms having perfect knowledge, all firms will ~~know about~~ be aware of the supernormal profits being made, and so, new firms will enter the industry to take advantage of these profits, which is easy to do as perfect competitor firms have no barriers to entry (or exit). Due to the large number of new firms in the industry, this will cause supply in the market to increase ~~fall~~, causing price to decrease in the market. As perfect competitors are price takers, they must accept the market price, therefore price decreases from P_2 to P_2', consequently shifting the AR curve downwards from AR to AR'. At this price the firm will now be earning normal profits. At the original ~~price~~ output of Q_2, the firm will be incurring marginal losses as $MC > MR'$, therefore the firm will decrease the output from Q_2 to Q_2', the new profit maximising output where $MC = MR'$. The firm is now making a normal profit in the long run ($TR = TC$) which removes the incentive for new firms to enter the industry.

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E8

QUESTION THREE: MONOPOLY

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The average real income per person in New Zealand increased from $43 313 to $48 472 between 2010 and 2015. This indicates an increase in purchasing power for New Zealand consumers during this time period.

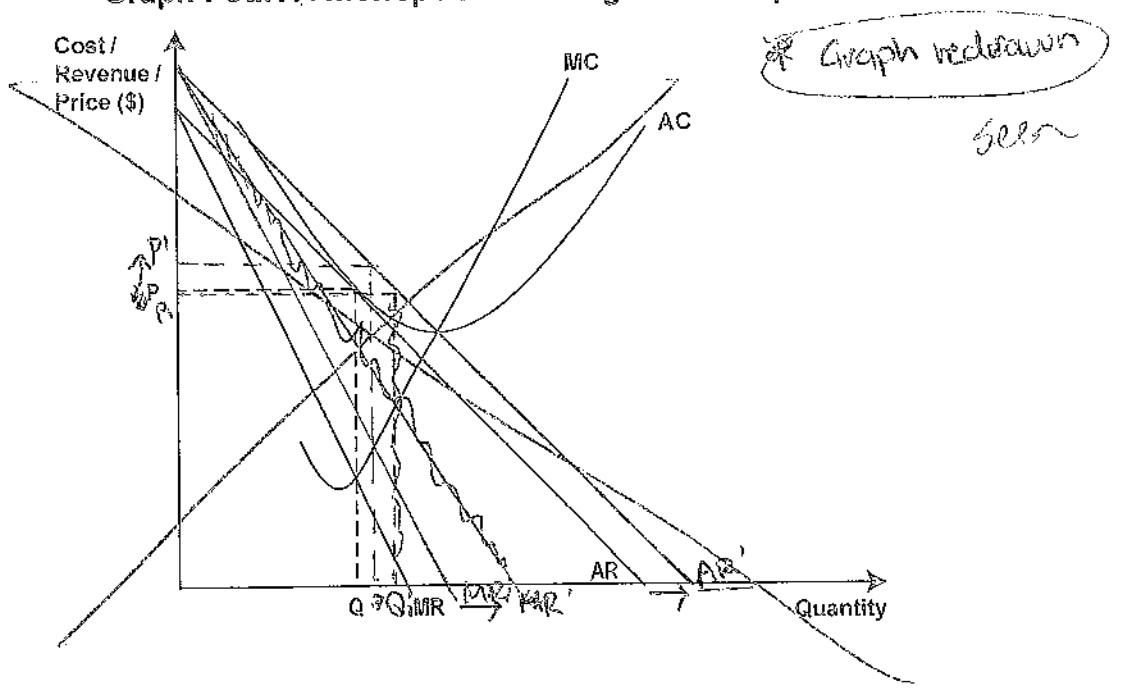
Source (adapted): http://www.stats.govt.nz/browse_for_stats/snapshots-of-nz/nz-social-indicators/Home/Standard%20of%20living/disp-income-pp.aspx

For the same time period, two-year fixed mortgage rates decreased from 7.2% to 5.3%.

Source (adapted): http://www.rbnz.govt.nz/statistics/key_graphs/mortgage_rates/

These two economic events could have resulted in an increase in market demand for some firms and a reduction in fixed costs for firms that had fixed mortgages on their premises.

Graph Four: A monopolist earning a normal profit



(a) Complete Graph Four above to show the impact of an increase in market demand on a monopolist earning a normal profit. Clearly label the changes (if any) to the profit-maximising price and the profit-maximising quantity.

(b) Complete Graph Five on page 9 to show the impact of a reduction in fixed costs on a monopolist earning a normal profit. Clearly label the changes (if any) to the profit-maximising price and the profit-maximising quantity.

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

QUESTION NUMBER

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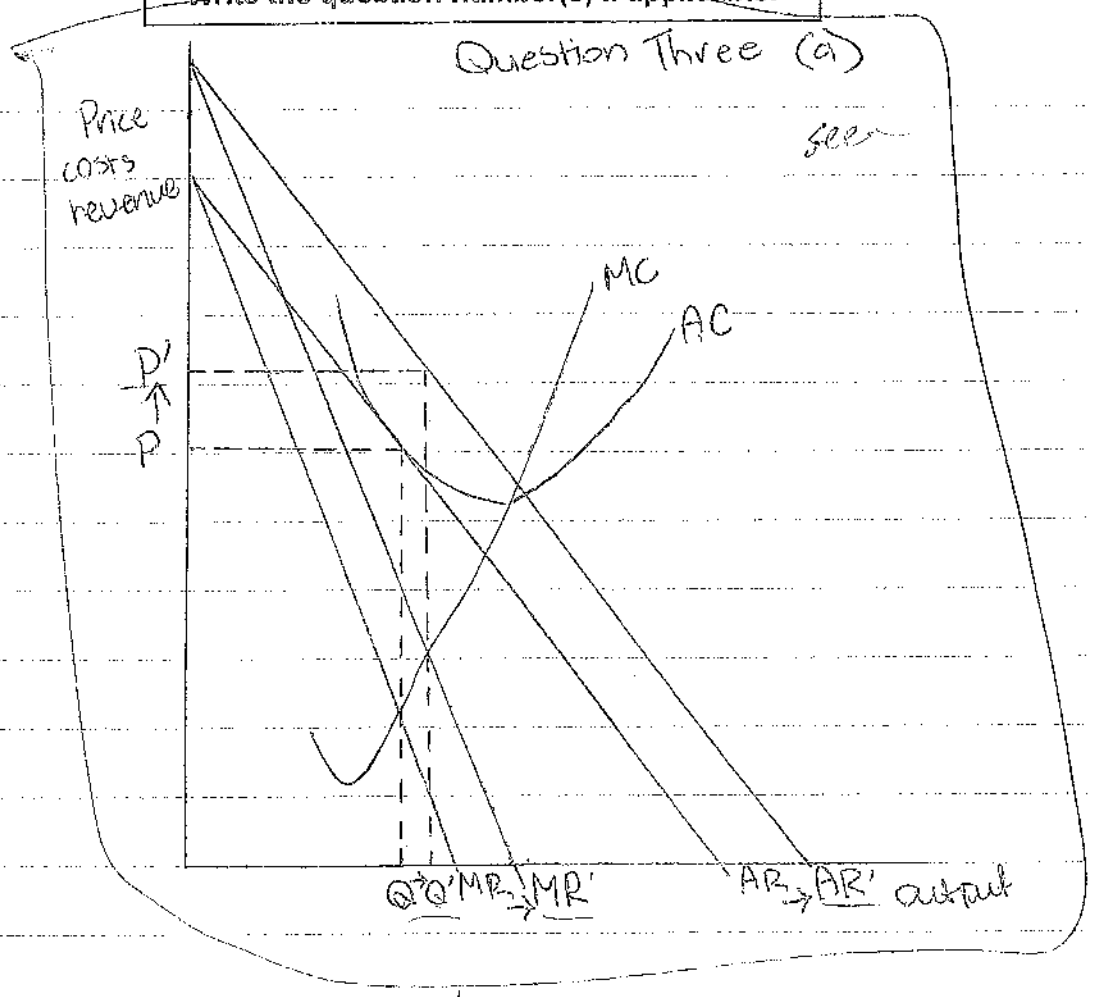
Question Three (a)



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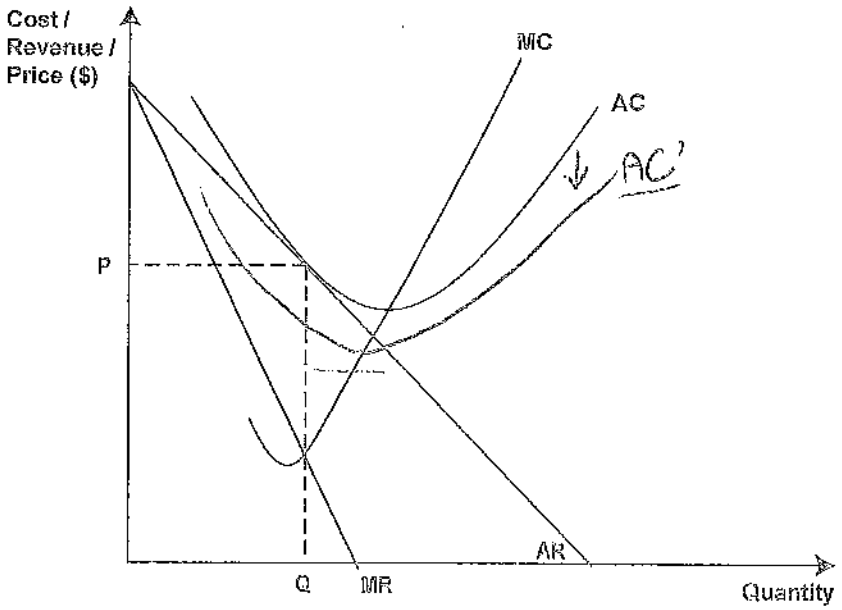
Graph Five: A monopolist earning a normal profit



(c) Use marginal analysis, and Graphs Four and Five, to compare and contrast the impact on the profit, price, and output decisions of a monopolist, of an increase in market demand with a reduction in fixed costs.

In your answer, include:

- the impact on a monopolist's profit of an increase in market demand
- the impact on a monopolist's profit of a reduction in fixed costs
- whether an increase in market demand or a reduction in fixed costs would have a greater impact on the profit-maximising price and profit-maximising quantity for a monopolist.

An increase in market demand will cause both the MR and AR curves to shift to the right from MR and AR to MR' and AR'. Price will increase, shown by the increase from P to P1. At the original profit maximising output of Q, the firm will be missing out on marginal profits as MC < MR', therefore the firm will increase output from Q to Qm' which is the new profit maximising output where MC = MR'. Due to this increase in demand, the firm will now be earning a supernormal profit as TR > TC, which is a profit sufficient enough to keep the firm in its current activity.
A reduction of fixed costs for the firm will mean there/

More answer space is available on the next page.

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will be a decrease in average costs, therefore the AC curve will shift downwards from AC to AC'. This decrease in AC means the firm will now be making a supernormal profit, As ~~there~~ TR is greater than TC. Price and output will not change. An increase in demand will have a greater impact on the profit maximising price and quantity, as due to the increase in demand price has increased from P to P'. At the original output of Q, the firm would be missing out on marginal profits as MR' > MC, therefore the firm will increase output to the new profit maximising output of Q' where MR' = MC. This means an increase in demand will cause both price and quantity to increase ~~A decrease~~ A decrease in fixed costs however will not cause the profit maximising price or output to change as MR still equals MC, therefore the greater change occurs due to an increase in demand.

E8

Excellence exemplar 2016

Subject:	Economics	Standard:	91400	Total score:	23

Q	Grade score	Annotation
1	E7	Shades and labels graph accurately. Explains in detail the effect on consumers of the allocatively efficient outcome, integrating the graph. Compares and contrasts the two positions on the graph with respect to deadweight loss and net welfare, integrating the graph. Omits an explanation of demand = supply (MC=AR) Explains in detail the government intervention at the allocatively efficient outcome in the electricity market. Omits an explanation of subnormal profit, AC>AR – hence an E7 is awarded.
2	E8	Shades and labels both graphs accurately. Explains in detail the changes to both markets in the long run, including market supply and market price, which lead to the changes in MR and AR for the firms. Explains in detail the normal profit earned in the long run AND that the incentive for firms to enter or exit is removed. Uses marginal analysis correctly to explain in detail the changes in output by the firms. Integrates the graph into all responses – hence an E8 is awarded.
3	E8	Redraws Graph Four accurately and labels changes on both graphs accurately. Explains in detail the impact on profit of a change in income, including changes to AR and MR and the resulting supernormal profit as TR>TC. Explains in detail the impact on profit of a change in fixed costs, reducing AC, making TR>TC. Explains in detail the change to profit-maximising price and quantity using marginal analysis correctly and integrating the graph throughout responses.