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Surname: StemUp Model Solution

Other names:

Pearson Edexcel Level 3 GCE

Centre Number

Candidate Number

Economics A

Advanced
Paper 1: Markets and Business Behaviour

Tuesday 5 June 2018 – Afternoon
Time: 2 hours

Paper Reference
9EC0/01

You do not need any other materials.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- There are three sections in this question paper. Answer **all** questions from Section A and Section B. Answer **one** question from Section C.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*

Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Calculators may be used.

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Turn over ▶

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SECTION A

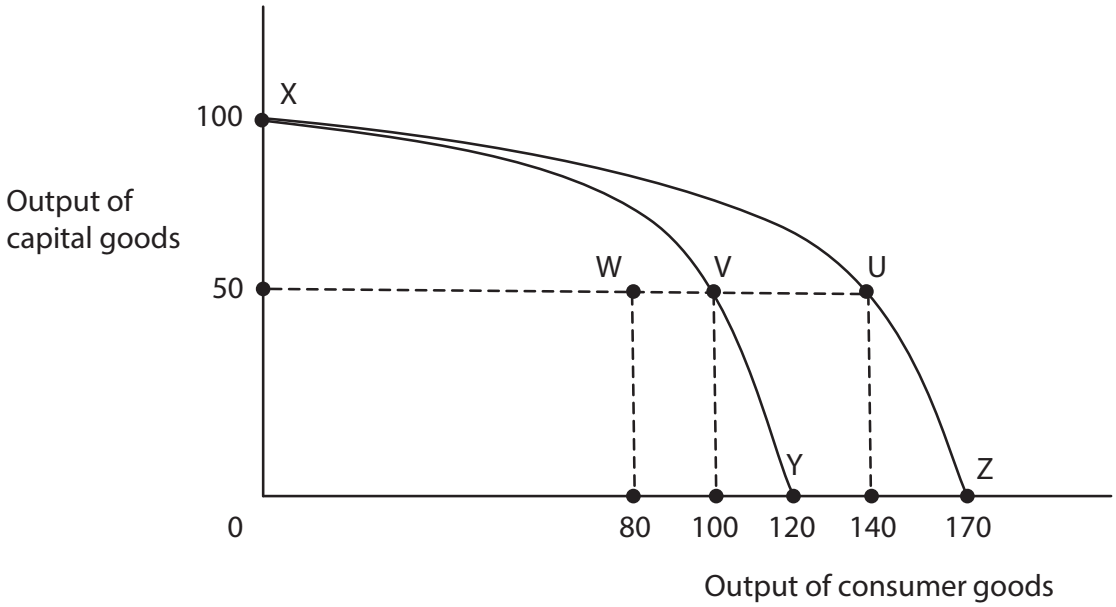
Answer ALL questions. Write your answers in the spaces provided.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

You are advised to spend 30 minutes on this section.

Use the data to support your answers where relevant. You may annotate and include diagrams in your answers.

1 The diagram refers to production possibility frontiers for a country that produces capital goods and consumer goods.



Originally, the economy has a production possibility frontier shown by the line **XY**, operating at point **V**. The production possibility frontier then moves to **XZ**, operating at point **U**.

(a) Calculate the **original** and the **new** opportunity cost of producing 50 capital goods. You are advised to show your working.

(2)

Original opportunity cost of 50 capital goods (on XY) = 120 − 100 = 20 consumer goods.

New opportunity cost of 50 capital goods (on XZ) = 170 − 140 = 30 consumer goods.

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(b) Which **one** of the following was the most likely cause of the movement in the production possibility frontier from **XY** to **XZ**?

(1)

- ☐ **A** A reduction in unemployment in consumer goods industries
- ☐ **B** A rise in the cost of producing consumer goods
- ☐ **C** An increase in demand for consumer goods
- ☒ **D** A technological improvement in the production of consumer goods

(c) Explain **one** characteristic of the economy at position **W**.

(2)

At W the economy is producing inside its production possibility frontier, so there is unemployment of resources and an inefficient allocation of resources (productive inefficiency). By using the unemployed resources the economy could increase the output of both consumer goods and capital goods: with 50 capital goods it could produce 100 consumer goods on XY (or 140 on XZ) instead of only 80.

(Total for Question 1 = 5 marks)

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2 The number of individual weekly ticket sales from UK National Lottery games operated by Camelot was 73 million in the financial year 2015–2016.

The sale price of each lottery ticket was £2. This figure included 24 pence of tax revenue on each ticket sold.

(a) Calculate the weekly revenue received by Camelot after paying the tax to the government. You are advised to show your working.

(2)

Revenue received per ticket after tax = £2 − £0.24 = £1.76

Weekly revenue = £1.76 × 73 million

= £128.48 million per week (about £128 million)

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Research conducted for HMRC estimated the cross elasticity of demand for using gaming machines to be 1.28 in response to changes in the price of national lottery tickets.

(Source: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/322845/report313.pdf)

In October 2013 Camelot increased the price of a national lottery ticket from £1 to £2.

(b) Explain the likely impact of the price increase of national lottery tickets on the demand for using gaming machines.

(2)

Gaming machines and national lottery tickets are substitutes, shown by the positive cross elasticity of demand of +1.28, so the price increase is likely to increase the demand for using gaming machines.

The price rose from £1 to £2, a 100% increase, so demand for gaming machines is likely to increase by about 1.28 × 100% = 128%. As the XED is greater than 1, they are close substitutes, so the demand curve for gaming machines shifts to the right as players switch away from the more expensive lottery tickets.

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In 2016 a coastal flood defence scheme was completed at Broomhill Sands in Kent, protecting people, homes and businesses. A £30 million grant from the National Lottery paid for the scheme.

(Source: https://www.gov.uk/government/news/30-million-project-set-to-reduce-flood-risk-in-kent)

(c) The most likely reason for this grant is to ensure the:

(1)

- ☒ **A** exclusivity of Broomhill Sands
- ☒ **B** provision of a private good
- ☒ **C** provision of a public good
- ☒ **D** rivalry of Broomhill Sands

(Total for Question 2 = 5 marks)

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3 The average fee charged by high-street estate agents to homeowners for selling property is 1.3% of the final sale price.

(Source: http://www.which.co.uk/money/mortgages-and-property/home-movers/guides/selling-a-house/estate-agent-fees-and-contracts)

(a) Assume the selling fee is 1.3%. Calculate the payment received by an estate agent on a property sold for £489 000. You are advised to show your working.

(2)

Payment = 1.3/100 × £489 000 = 0.013 × £489 000

= £6 357

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In August 2016 the Office for National Statistics reported that the average house price in London was £489 000, whereas in the North East of England it was £127 000.

(b) The ratio of the average house price in London to the average house price in the North East of England is:

(1)

- ☒ **A** 0.26
- ☒ **B** 3.62
- ☒ **C** 3.85
- ☒ **D** 7.40

(c) Explain **one** likely reason for the difference in average house prices between London and the North East of England.

(2)

One likely reason is the difference in average incomes: average incomes and wealth are much higher in London than in the North East of England.

Higher average incomes in London mean people are able to obtain larger mortgages and so can afford to pay higher prices, so demand for housing is much higher. With a limited supply of housing, due to a shortage of land to build on and green belt restrictions, this greater demand pushes the average price up to £489 000 compared with £127 000 in the North East.

(Total for Question 3 = 5 marks)

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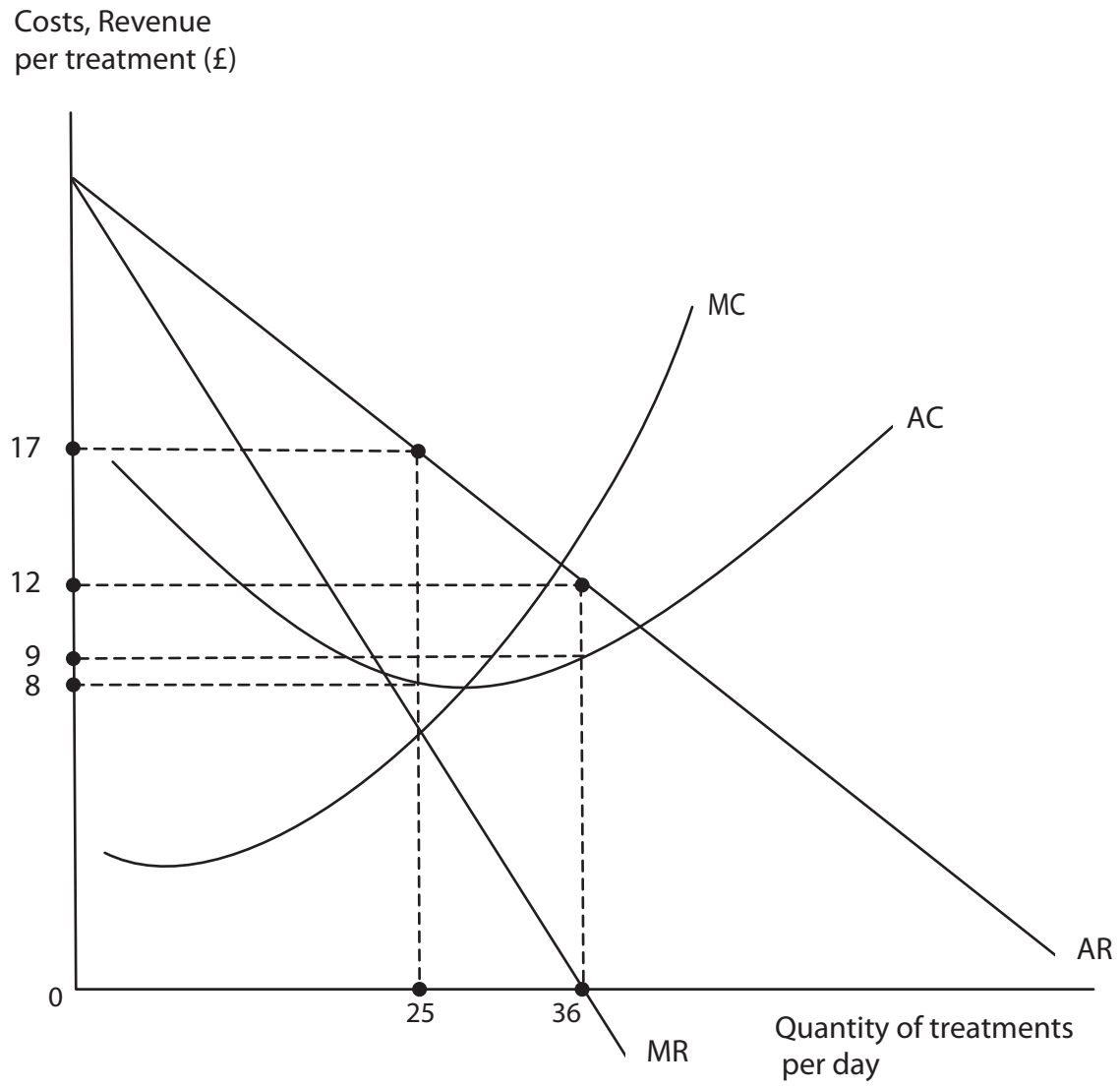
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QUESTION 4 BEGINS ON THE NEXT PAGE.

4 Emily owns and operates a nail ink salon. The diagram shows the cost and revenue curves for treatments at her nail ink salon. Initially, Emily sets her price to maximise profits.



(a) Calculate the **change in total supernormal profit** if Emily changes her objective from profit maximisation to revenue maximisation. You are advised to show your working.

(4)

Profit maximisation is where MC = MR: output = 25 treatments, price (AR) = £17, AC = £8.

Supernormal profit = (AR – AC) × Q = (£17 – £8) × 25 = £225 per day (TR £425 – TC £200).

Revenue maximisation is where MR = 0: output = 36 treatments, price (AR) = £12, AC = £9.

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Supernormal profit = (£12 – £9) × 36 = £108 per day (TR £432 – TC £324).

Change in total supernormal profit = £108 – £225 = –£117

So total supernormal profit falls by £117 per day.

(b) Emily now decides to change her objective from revenue maximisation to sales maximisation. This change will lead to:

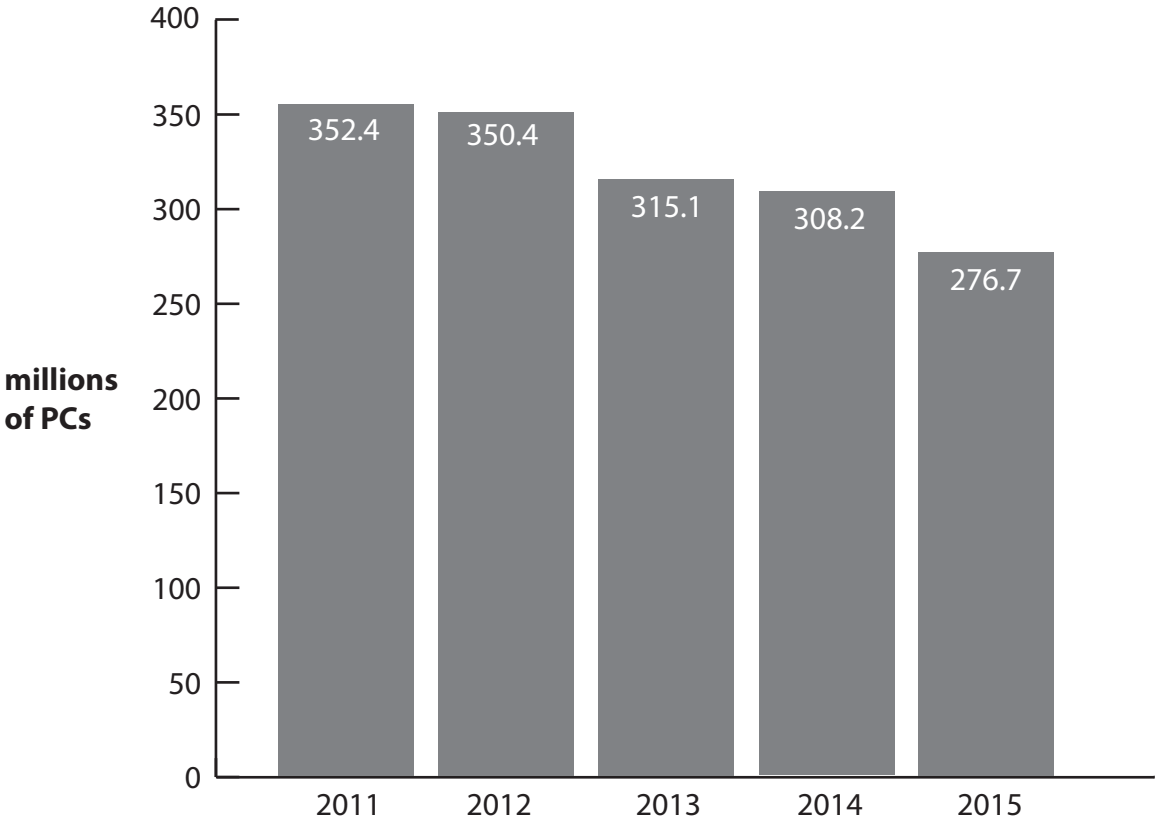
(1)

- ☐ **A** a decrease in the number of customers
- ☒ **B** a decrease in the price of treatments
- ☐ **C** an increase in productive efficiency
- ☐ **D** an increase in the level of profit

(Total for Question 4 = 5 marks)

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5 The following graph shows the global sales of personal computers (PCs) between 2011 and 2015.



(Source: adapted from IDC and reported in *The Times*, 14th January 2016)

(a) The percentage decrease in sales of PCs between 2011 and 2015 is:

(1)

☒ **A** 21.5

☒ **B** 27.3

☒ **C** 31.5

☒ **D** 75.7

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(b) Explain **one** likely reason for the decrease in sales of PCs.

(2)

One likely reason is the development of substitutes such as tablets (e.g. iPads) and smartphones, which reduces the demand for PCs.

Tablets and smartphones are more convenient to carry around, and new technology has made them increasingly powerful in their functions, so many consumers now buy these devices instead of a PC. The demand curve for PCs shifts left, so global sales fell from 352.4 million in 2011 to 276.7 million in 2015.

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The following table shows global sales of PCs by company in 2015.

Company	Sales of PCs (million)
Lenovo	57 182
HP	53 534
Dell	39 049
Apple	20 794
Acer Group	19 680
Others	86 461
Total	**276 700**

(Source: IDC, reported in *The Times*, 14th January 2016)

(c) Calculate the five-firm concentration ratio. You are advised to show your working.

(2)

Sales of the five largest firms = 57 182 + 53 534 + 39 049 + 20 794 + 19 680 =

190 239 million

Five-firm concentration ratio = 190 239 ÷ 276 700 × 100

= 68.75% ≈ 68.8%

(Total for Question 5 = 5 marks)

TOTAL FOR SECTION A = 25 MARKS

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QUESTION 6 BEGINS ON THE NEXT PAGE.

SECTION B

Read Figures 1 and 2 and the following extracts (A to C) before answering Question 6.

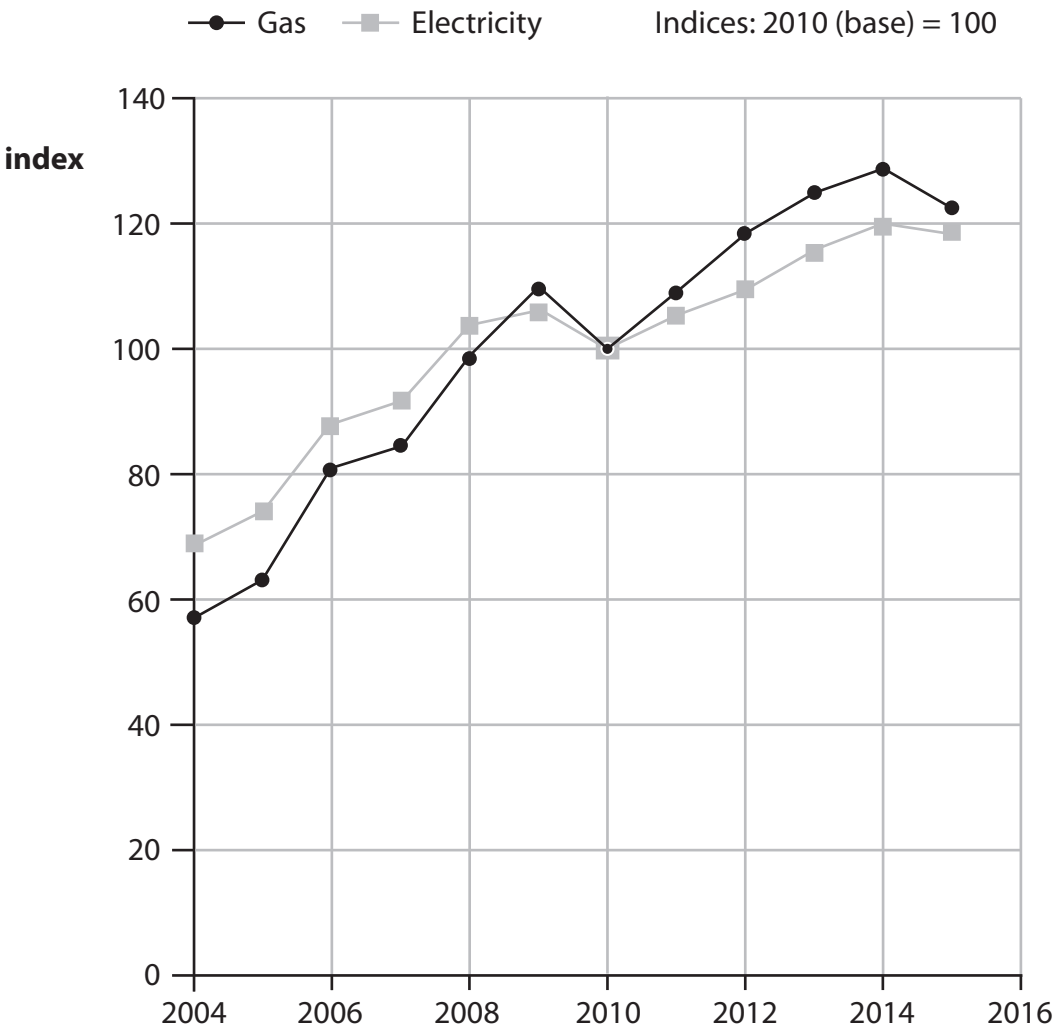
Write your answers in the spaces provided.

You are advised to spend 1 hour on this section.

Question 6

The UK energy market

Figure 1: UK retail electricity and gas real price indices, 2004–2015



(Source: https://assets.publishing.service.gov.uk/media/5773de34e5274a0da3000113/final-report-energy-market-investigation.pdf)

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Figure 2: UK retail electricity and gas supply: market share by company, 2016

Company	Electricity %	Gas %
British Gas	23	36
EON	16	13
SSE	16	13
EDF	12	8
Scottish Power	11	9
RWE (nPower)	10	9
Other companies	12	12
Total	**100**	**100**

(Sources: https://www.ofgem.gov.uk/chart/electricity-supply-market-shares-company-domestic-gb and https://www.ofgem.gov.uk/data-portal/retail-market-indicators)

Extract A

Competition and Markets Authority (CMA) report into the UK energy market

An investigation into the UK energy market by the CMA concluded that customers have been paying £1.4 billion a year more than they would in a fully competitive market. It found that 70% of domestic customers of the six largest energy firms were on an expensive standard rate. These customers could each save over £300 a year by switching to a cheaper deal but appear reluctant to do so.

However, the CMA investigation found no evidence of anti-competitive practices by firms. There has even been an increase in new entrant energy suppliers over recent years and their combined market share has reached 12% in both gas and electricity supply.

To protect consumers, the CMA has introduced various measures to open up and increase competition in the UK energy market. These include:

- the creation of a database designed to help consumers switch energy suppliers – rival suppliers can directly contact these customers
- the conversion of all homes to smart energy meters making it easier for customers to measure energy consumption and switch supplier
- new rules to protect the four million vulnerable customers using prepaid meters – this includes a temporary price cap until smart meters have been installed.

(Source: adapted from 'Competition and Markets Authority Final report into Energy Market Investigation' https://www.gov.uk/government/news/cma-publishes-final-energy-report-in-full)

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Extract B

Proposals to regulate profits in the UK energy market

Currently energy retail companies make an average profit of 7% of total revenue. The Chairman of the Competition and Markets Authority (CMA) suggested that these profits are as much as five times higher than they should be, given the companies' limited role in marketing, metering and billing customers. He recommended a profit cap of 1.25% of total revenue.

However, Scottish Power criticised proposals for regulating profits saying that it would reduce investment in the energy industry and undermine long-term energy provision. The firm claimed that such a low rate of return is below the profit margin made by supermarkets.

All six large energy firms are vertically integrated – producing as well as distributing gas and electricity. This can provide efficiency benefits but also harm competition.

(Source: adapted from 'Profit cap doesn't fit with new investment, energy boss warns', by Robin Pagnamenta, *The Times*, 19th September 2016)

Extract C

Skills shortages in the UK energy sector

The energy sector is facing a skills shortage of engineers and technicians. Some 29% of employers in the gas and electricity industries report unfilled job vacancies compared with an average of 18% across all industries.

A lack of information and advice on career prospects for young people is partly to blame - many graduates have a negative image of the work involved. There is also a lack of students taking science, technology, engineering and maths-based subjects at school and university. Less than one-fifth of the energy sector's workforce are women.

The energy sector is characterised by an ageing workforce - data from the UK Labour Force Survey reveal that around two-thirds of workers are aged over 50. These cannot easily be replaced as a long time period is required for training and developing workers' skills in a highly regulated industry.

Urgent action is required by businesses and the government to reduce labour immobility to benefit the energy sector. This action could include policies to increase investment in training programmes, recruit skilled workers from overseas, change the industry image and deal with its ageing workforce.

(Source: adapted from 'Sector insights: skills and performance challenges in the energy sector', by the UK Commission for Employment and Skills, March 2015; https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/416998/15.03.25._Energy_SLMI_-_evidence_report.pdf)

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6 (a) With reference to Figure 1, explain **one** likely reason for the overall trend in the real price of gas and electricity.

(5)

(b) With reference to Extract A, discuss the likely effectiveness of 'measures to open up and increase competition' in the UK energy market.

(12)

(c) With reference to Extract B, assess how the regulation of energy suppliers' profits is likely to affect consumers **and** suppliers in the energy market.

(10)

The price elasticity of demand for electricity in the UK is estimated to be –0.35 in the short run and –0.85 in the long run.

(d) With reference to Extract A and your own knowledge, examine **two** possible reasons for the change in price elasticity of demand for electricity over time.

(8)

(e) With reference to Extract C and your own knowledge, discuss policies businesses **and** government might implement to reduce labour immobility to benefit the energy sector.

(15)

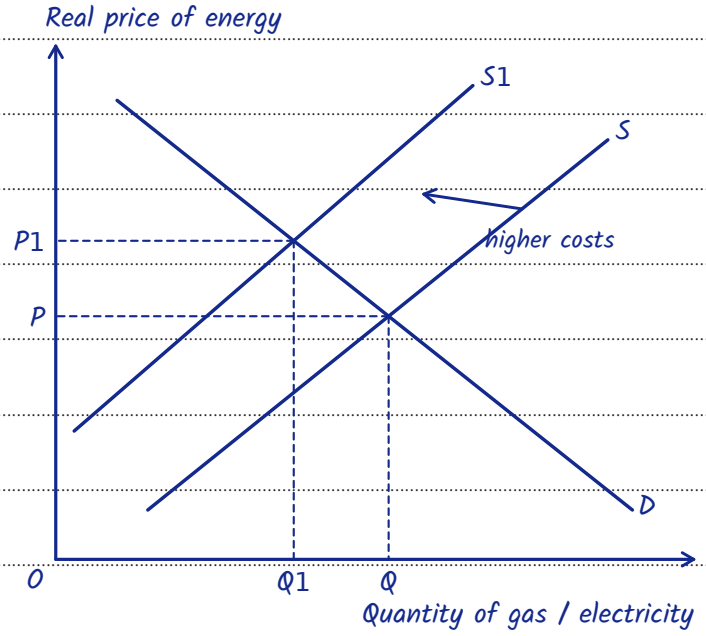
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(a) With reference to Figure 1, explain **one** likely reason for the overall trend in the real price of gas and electricity.

(5)

The real price of gas and electricity is the price adjusted to remove the effects of inflation. Figure 1 shows a clear upward trend: the real price index of electricity rose from about 70 in 2004 to about 119 in 2015, a rise of around 70%, while gas rose from about 58 to about 121, more than doubling (about 108%).

One likely reason is a decrease in supply due to rising costs of production. Gas is a finite, non-renewable resource, so as reserves such as North Sea gas are depleted, wholesale gas prices rise, which also raises the cost of generating electricity in gas-fired power stations. Higher costs shift the supply curve left from S to S1, as in my diagram. At the original price P there is now excess demand, so the price is bid up to P1, causing a contraction in demand and an extension in supply until the new equilibrium at Q1. As demand for energy is price inelastic (−0.35 in the short run), quantity falls only a little and most of the higher cost is passed on to consumers as higher real prices.



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(b) With reference to Extract A, discuss the likely effectiveness of 'measures to open up and increase competition' in the UK energy market.

(12)

The CMA measures aim to increase competition by reducing barriers to switching, removing imperfect and asymmetric information and making it easier for new firms to enter the market. Extract A shows the scope for this: customers pay £1.4 billion a year more than in a fully competitive market and 70% of domestic customers of the six largest firms are on an expensive standard rate, even though they could each save over £300 a year by switching.

The customer database allows rival suppliers to contact these customers directly to offer better deals. This gives new entrants better market knowledge of the customers of each energy supplier, reducing a barrier to entry, and could build on the recent increase in new entrants, whose combined market share has reached 12% in both gas and electricity. As customers switch, the Big Six would be forced to cut their standard rates to retain market share, moving prices closer to the competitive level and reducing supernormal profits.

The conversion of all homes to smart meters increases market information for consumers on their energy consumption and its cost, reducing the problem of asymmetric information between suppliers and households. Consumers who can see what they spend are more likely to search for better deals and switch supplier, which forces energy suppliers to become more price competitive and could reduce the £1.4 billion overcharge.

The temporary price cap for the four million vulnerable customers on prepaid meters acts as a surrogate for competition, limiting increases in energy bills and offering protection for those least able to switch. It may also give firms some certainty over the price they could charge, encouraging market entry.

However, the effectiveness of the measures is likely to be limited. Many consumers may still not switch to cheaper tariffs because of inertia, habit or the difficulty of computing which tariff is best, which explains why customers 'appear reluctant' to switch even with savings of

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£300 available. The database may have unintended consequences: customers may be annoyed by repeated telephone calls and ignore them, or suffer information overload, making it even harder to make a decision.

Significant barriers to entry also remain in the domestic energy market, such as large economies of scale enjoyed by established firms, customer loyalty to brands like British Gas, which still has 23% of electricity and 36% of gas supply, high advertising costs and licences required to supply energy. The price cap is only temporary and covers just 4 million customers, and it may discourage entry as there is less profit incentive; firms may also treat the cap as a target price, so prices converge on it and competition falls.

Finally, the CMA found no evidence of anti-competitive practices, so the problem is mainly consumer behaviour rather than firms' conduct. Overall, the measures are likely to be partly effective: smart meters and the database tackle the information problem and support new entrants, but their success depends on whether consumers actually change their habits and switch, which may take a long time.

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(c) With reference to Extract B, assess how the regulation of energy suppliers' profits is likely to affect consumers **and** suppliers in the energy market.

(10)

A profit cap is a limit on the profits a firm may earn, here as a percentage of total revenue. It is usually introduced where supernormal profits are regarded as excessive and where there is little competition or collusion is possible. Extract B shows that the Chairman of the CMA recommended a cap of 1.25% of total revenue, compared with the current average profit of 7%, because profits are up to five times higher than they should be given the firms' limited role in marketing, metering and billing customers.

For consumers, a profit cap is likely to mean lower energy bills, as suppliers can no longer charge prices far above cost. Households would be better off in real terms and consumer surplus would rise; low income households, for whom energy is a large share of spending, benefit most. Firms that use a lot of energy would face lower costs of production, making them more competitive, and consumers may increase energy consumption.

For energy suppliers, the cap means lower revenue relative to costs and so lower profits. This leaves less retained profit for investment, so, as Scottish Power argues, it could reduce investment in the energy industry and undermine long-term energy provision. Shareholders may receive lower dividends and share prices may fall, and firms may change their objective, for example from profit maximisation to sales maximisation.

However, the effects depend on several factors. With a cap, firms have less incentive to control costs, so they may become x-inefficient or cut investment, which could push prices up for consumers in the long run and risk power shortages. The impact also depends on the level of the cap and how long it is applied: 1.25% may be too harsh, as it is below the profit margin made by supermarkets, and may deter new entrants, reducing competition.

On the other hand, all six large firms are vertically integrated, so they can still make profits in the generation of gas and electricity, and multinational owners may use transfer pricing to avoid the cap. Energy firms appear to have made large profits in previous years and face low

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risk in their retail operations, so they may be able to cope with lower returns. Overall, consumers are likely to gain in the short run, but the long-run effect depends on whether lower profits reduce investment in energy supply.

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The price elasticity of demand for electricity in the UK is estimated to be –0.35 in the short run and –0.85 in the long run.

(d) With reference to Extract A and your own knowledge, examine **two** possible reasons for the change in price elasticity of demand for electricity over time.

(8)

Price elasticity of demand (PED) measures the responsiveness of quantity demanded to a change in price. Demand for electricity is price inelastic in both periods, but it becomes less inelastic over time, rising from −0.35 in the short run to −0.85 in the long run.

Firstly, it takes time for consumers to switch supplier or change consumption habits after a price change. In the short run consumers show habitual behaviour and have imperfect market information, and existing contracts make it difficult to switch, so Extract A shows 70% of domestic customers of the six largest firms stay on an expensive standard rate. In the long run, improved knowledge of consumption through smart meters and the new switching database will make consumers more price sensitive, so they respond more to price rises.

Secondly, more substitutes become available in the long run. Households can buy energy-efficient appliances such as electricity-saving light bulbs and kettles, switch to gas appliances or install solar panels and produce their own electricity. New firms may also enter using biofuel, solar or wind. These take time and money to install, so in the short run there are few alternatives, but over time demand becomes more price elastic.

However, these are averages for all households and there is great variation between them. High income households spend only a small part of their income on electricity, so their demand remains very price inelastic, and some households will keep imperfect knowledge or cannot change their habits. Although the elasticity more than doubles, a magnitude of −0.85 means demand still remains price inelastic in the long run, as there are no close substitutes for electricity for many uses.

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(e) With reference to Extract C and your own knowledge, discuss policies businesses **and** government might implement to reduce labour immobility to benefit the energy sector.

(15)

Labour immobility is the inability of workers to move between occupations (occupational immobility) or locations (geographical immobility). Extract C shows severe occupational immobility in the energy sector: 29% of employers report unfilled vacancies compared with an average of 18% across all industries, there is a shortage of engineers and technicians, fewer than one-fifth of the workforce are women and around two-thirds of workers are aged over 50.

Businesses could increase investment in training programmes and modern apprenticeships, raising the quantity and quality of human capital and so labour productivity. The government could support this with subsidies or tax breaks to energy firms that train workers, and by funding more STEM courses at school and university, since a lack of students taking these subjects is partly to blame. This increases the supply of skilled labour, reducing wage pressure and allowing firms to fill vacancies.

Firms could also recruit skilled workers from overseas, through careers fairs and trade journals, providing a ready supply of engineers. Changing the industry image, through better careers advice and marketing programmes with information on career paths, could appeal to young people, graduates and more female school leavers, widening the pool of labour. To deal with the ageing workforce, firms could retain older workers by improving working conditions and pay and offering flexible or part-time work, while the government could raise the state retirement age. Older workers have high levels of human capital, so productivity would be maintained.

However, training involves an opportunity cost for businesses and government, and it takes a long time to train labour in higher order technical skills in a highly regulated industry, so it will not solve the shortage in the short run. Firms may also fear that trained workers will

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be poached by rivals, so they under-invest, and the quality of training programmes varies.

Recruiting from overseas may face problems such as access to UK jobs following the Brexit decision, language barriers, differences between overseas qualifications and those required, and higher staff turnover if workers return home. Family ties and high house prices may also create geographical immobility. Changing the image of the sector may require high marketing expenditure, and some jobs may not suit parents with family commitments, so the number of women attracted may be small.

Retaining older workers could lead to problems of poor health, lower productivity and less ability to learn new tasks, and the underlying shortage remains because these workers will eventually retire. Firms may instead use new technology to substitute capital for labour, meaning reducing labour immobility is less of a priority.

In conclusion, the most effective approach is a combination: in the short run, business recruitment from overseas and retention of older workers can fill vacancies, while in the long run government-funded STEM education and business training are needed to tackle the root cause. The success depends on the cost, the time lags and on cooperation between businesses and government.

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(Total for Question 6 = 50 marks)

TOTAL FOR SECTION B = 50 MARKS

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SECTION C

Answer ONE question from this section.

Write your answer in the space provided.

You are advised to spend 30 minutes on this section.

EITHER

7 In September 2016 the government approved the building of an £18 billion nuclear power station, Hinkley Point C, which will supply 7% of UK electricity for up to 60 years. The power station is funded by Chinese and French investment.

Evaluate the likely private costs and external costs involved in such major power station construction projects. Use an appropriate externalities diagram in your answer.

(Total for Question 7 = 25 marks)

OR

8 In July 2016 Apple's share of the UK market for smartphones was 38%.

Evaluate whether such a high market share for one company is in the consumer interest. Use appropriate diagrammatic analysis in your answer.

(Total for Question 8 = 25 marks)

Indicate which question you are answering by marking a cross in the box ☒. If you change your mind, put a line through the box ☒ and then indicate your new question with a cross ☒.

Chosen question number: **Question 7** ☒ **Question 8** ☒

Write your answer here:

Private costs are the costs of an economic activity paid by the producer or consumer directly involved, whereas external costs are costs imposed on third parties who are not involved in the transaction and are not compensated. Social cost is private cost plus external cost. The £18 billion Hinkley Point C project, supplying 7% of UK electricity for up to 60 years, involves both.

The private costs of such a major power station are very large. They include the purchase of land, machinery and specialist reactor technology, the construction of buildings, labour costs for thousands of engineers and construction workers, security costs and raw materials such as concrete, steel and nuclear fuel. These are borne by the French and Chinese investors,

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but are ultimately passed on to consumers through the high, guaranteed price of electricity, which is above the current market price. There is also the risk of cost overruns due to imperfect market knowledge, as the reactor technology is not fully proven, and the long-run costs of decommissioning and storing nuclear waste.

The external costs fall on third parties. During construction there is noise and road congestion from heavy lorries, air pollution from construction traffic, a visual eyesore on the coastline and damage to wildlife and habitats. Local property prices may fall. Once operating, there is the risk of a leak or contamination, and the very small but potentially catastrophic risk of a major nuclear plant failure. There is also the risk from foreign ownership and control of strategic infrastructure, and a long-term income outflow on the balance of payments as profits are returned to France and China.

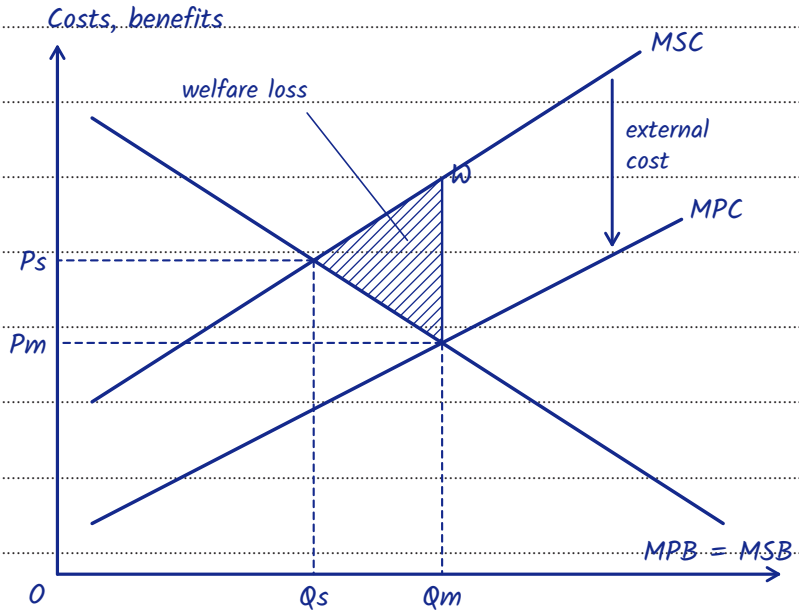
My diagram shows this market failure. Because the investors only consider private costs, the market equilibrium is where MPC = MPB, at quantity Qm and price Pm. The external cost means that MSC lies above MPC, with the vertical distance between them equal to the external cost per unit. The socially efficient quantity is where MSC = MSB, at Qs, with price Ps. The market therefore overproduces construction by Qm – Qs, and the units between Qs and Qm have a social cost greater than their social benefit, creating the shaded triangle of welfare loss. This suggests that, if only private costs are considered, too much construction takes place and resources are misallocated.

However, there are several reasons to evaluate this view. Firstly, it is very difficult to measure and attach a monetary value to the private costs, and especially the external costs, such as the risk of a nuclear accident or the value of lost wildlife, so the position of the MSC curve and the size of the welfare loss are uncertain. The probability of failure is very low, as extremely tight safety regulations, among the strictest in the world, will be imposed on building and operating the station.

Secondly, many external costs are short term. Construction will take at least 10 years, and

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noise and congestion end once building is complete, while government intervention, such as noise abatement measures and planning conditions, can reduce the size of the external costs and so the welfare loss.

Thirdly, the project creates significant private and external benefits that may offset the costs. It creates employment and income locally and nationally, with positive multiplier effects, and the French and Chinese firms see it as a first step to securing further contracts around the world. It increases the security of energy supply, providing 7% of UK electricity for sixty years as coal power stations close, and diversifies UK energy production, spreading the risk from intermittent sources such as wind and solar power. Nuclear energy has low carbon emissions, making it easier for the government to achieve internationally agreed carbon targets, and consumers gain a stable electricity price. If these external benefits are included, MSB lies above MPB, which may reduce or even remove the welfare loss.

On the other hand, there is a risk of government failure: some argue the government could not withdraw from Hinkley Point without a major loss of trade with China, and the guaranteed price may mean consumers pay far more than for alternatives such as offshore

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wind, whose costs are falling. In the long run the profit outflows may also worsen the balance of payments, although the investment brings an inflow in the short run.

In conclusion, the private costs of major power station construction are enormous and the external costs, particularly environmental damage and the risk of nuclear contamination, are significant, so without intervention there is a risk of overproduction and welfare loss. However, the size of the external costs is hard to measure, many are temporary and can be reduced by regulation, and they must be weighed against large benefits in energy security and low carbon emissions. On balance, the costs are justified only if strict safety regulation is enforced and the long-term benefits are as large as expected.

Question 8

A monopoly in theory is a single seller in a market, but in the UK a firm with more than 25% market share is regarded as having monopoly power by the CMA. With 38% of the UK smartphone market in July 2016, Apple exceeds this definition. Acting in the consumer interest means outcomes such as low prices, wide choice, high product quality, good customer service, allocative efficiency and investment in innovation.

A high market share may be against the consumer interest. A profit-maximising firm with monopoly power produces where MC = MR, as shown in my diagram, at output Qm and price Pm. In a competitive market price would be set where MC = AR, at the lower price Pc and higher output Qc. Consumers therefore pay a higher price for fewer smartphones, the firm earns supernormal profit (SNP) and there is a loss of consumer surplus, with the shaded triangle showing the deadweight loss of monopoly. As price is above marginal cost, the firm is allocatively inefficient.

Apple can also use its market power to increase barriers to entry, for example by locking its phones to its own operating system and App Store, which raises switching costs and reduces consumer choice. Without strong competitive pressure, the firm may become x-inefficient,

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with higher costs leading to higher prices, and there may be little significant innovation, with only minor quality updates or features added while prices rise. A high market share also creates greater possibility of collusion, overt or tacit, with the few other large firms in the market.

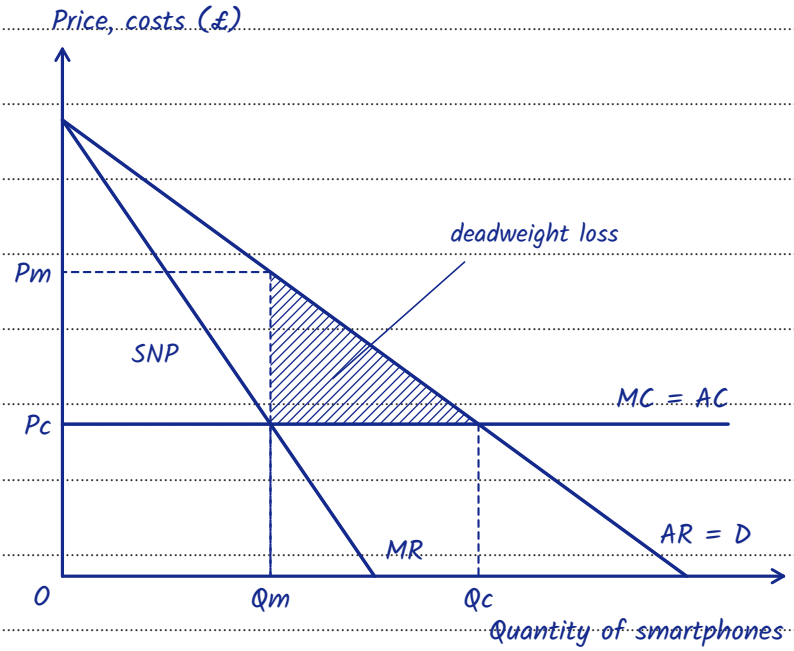
However, a high market share may be in the consumer interest. Apple's large scale allows it to exploit economies of scale in production, purchasing and marketing, and if lower average costs are passed on as lower prices, consumers can benefit compared with a fragmented market. Supernormal profits can fund research and development, leading to dynamic efficiency: innovative, high quality products, wider choice of features, better customer service and investment, as seen in successive iPhone models.

In addition, Apple may not profit maximise. If it uses limit pricing to deter entry, or pursues revenue or sales maximisation, its price may act as a surrogate for competitive pricing and move closer to the allocatively efficient price and output.

Evaluation depends on several factors. Firstly, it depends on how powerful the other firms are. With 38%, Apple faces strong rivals such as Samsung, so the market is more like an oligopoly than a pure monopoly, and competition between a few large firms may still be effective, especially through non-price competition. Secondly, it depends on how contestable the market is: new entrants such as China's Huawei have recently joined the smartphone market and are expected to gain a large market share, offering new consumer choice, which limits Apple's ability to raise prices.

Thirdly, it depends on the objective of the firm and the effectiveness of regulation by the CMA, which can investigate abuses of market power. Finally, real price increases of smartphones may be due to higher wholesale or production costs or increased global demand rather than market power, so high prices are not necessarily evidence that consumers are being exploited. Consumers who buy iPhones also do so voluntarily, as they value the brand and quality.

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The impact also differs between groups of consumers and over time. Loyal Apple customers with price inelastic demand may pay high prices for premium models, while price sensitive consumers can choose cheaper Android phones, so their welfare is protected by competition. In the short run Apple may exploit its position, but in the long run supernormal profits attract rivals, and rapid technological change makes market power temporary, as shown by Nokia and BlackBerry, which once had high market shares but lost them. A high market share today therefore does not guarantee monopoly power in the future.

In conclusion, a 38% market share gives Apple significant market power, which could lead to higher prices, restricted choice and a deadweight loss. However, in a contestable and innovative market, with strong rivals and effective CMA regulation, the benefits of economies of scale and dynamic efficiency are likely to outweigh these costs, so on balance such a market share is probably in the consumer interest, as long as competition and regulation remain strong.

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TOTAL FOR SECTION C = 25 MARKS
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