

Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

StemUp Model Solution

Forename(s)

Candidate signature

I declare this is my own work.

AS ECONOMICS

Paper 1 The Operation of Markets and Market Failure

Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:

- the Insert
- a calculator.

Instructions

- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions in **Section A**.
- Answer **either** Context 1 **or** Context 2 in **Section B**.
- You will need to refer to the Insert provided to answer **Section B**.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The maximum mark for this paper is 70.
- The marks for questions are shown in brackets.
- No deductions will be made for wrong answers.

For Examiner's Use	
Section	Mark
A	
B	
TOTAL	



J U N 2 2 7 1 3 5 1 0 1

Section AAnswer **all** questions in this section.Only **one** answer per question is allowed.

For each question completely fill in the circle alongside the appropriate answer.

CORRECT METHOD



WRONG METHODS

If you want to change your answer you must cross out your original answer as shown. If you wish to return to an answer previously crossed out, ring the answer you now wish to select as shown. **0 1**

Choice is central to the economic problem because

A incomes are unequally distributed.**B** most resources are scarce.**C** people's wants are greater than their needs.**D** people's wants are limited.**[1 mark]****0 2**

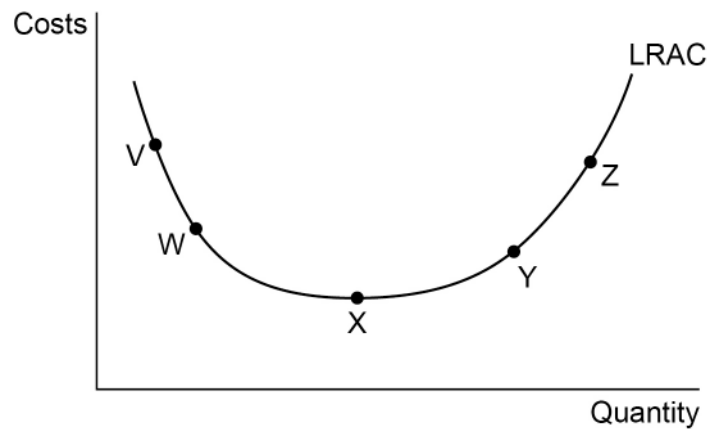
A fast food restaurant is willing to supply 3000 burgers a week at a market price of £5 a burger. The price elasticity of supply of burgers is 2. If the market price falls to £4 a burger, the number of burgers that the restaurant will be willing to supply will be

A 1800**B** 2700**C** 3300**D** 4200**[1 mark]**

0 3

Figure 1 shows the long-run average cost curve (LRAC) for a firm.

Figure 1



Which one of the following movements along the curve shows a reduction in diseconomies of scale?

A V to W

☐

B X to W

☐

C X to Y

☐

D Z to Y

☒

[1 mark]

0 4

A government decides to increase its subsidy to rail services to encourage more people to travel by rail. The subsidy is most likely to be successful if rail travel has a

A demand that is elastic with respect to price.

☒

B demand that is inelastic with respect to price.

☐

C high positive income elasticity of demand.

☐

D negative cross elasticity of demand with respect to car travel.

☐

[1 mark]

Turn over ►



0 5 A public good always has the characteristic that

- A** consumption by one person does not reduce availability to others. ☒
- B** it is provided free of charge by the government to all citizens. ☐
- C** its consumption gives rise to positive externalities for others. ☐
- D** the supply is funded from a government's tax revenue. ☐

[1 mark]

0 6 Which one of the following best describes the market conditions for a firm in a perfectly competitive market?

- A** Limited consumer information and no product differentiation ☐
- B** Low entry barriers and some product differentiation ☐
- C** No entry barriers and low price-setting power ☐
- D** No price-setting power and unlimited consumer information ☒

[1 mark]



0 7

Weekly sales of doughnuts are 20 000 and the market price is £1.20 per doughnut. The government introduces a new indirect tax of 15p per doughnut. Sales fall to 16 000 a week and the price rises to £1.30 per doughnut.

The share of the total weekly tax that is borne by doughnut producers is

A £800

☒

B £1000

☐

C £1600

☐

D £2400

☐

[1 mark]

0 8

An economist puts forward a hypothesis, collects evidence to test it, and then accepts, modifies, or rejects the hypothesis.

This is an example of

A a positive policy statement.

☐

B economic methodology.

☒

C how value judgements influence economic decisions.

☐

D normative economics.

☐

[1 mark]

Turn over for the next question

Turn over ►



0 9

A government plans to plant a new forest to provide a recreation facility and help combat climate change.

Estimates of the costs and benefits are shown in **Table 1**.

Table 1

	Private costs	Social costs	Private benefits	Social benefits
£ million	13	9	14	16

From the figures in **Table 1**, it can be concluded that the forest project will have

- A** negative production externalities of £9 million.
- B** positive consumption externalities of £16 million.
- C** positive production externalities of £4 million.
- D** total externalities of £25 million.

☐
☐
☒
☐

[1 mark]

1 0

The demand for cocoa is derived from the demand for chocolate. When the demand for chocolate falls, the most likely result is a

- A** movement along the demand curve for cocoa.
- B** movement along the supply curve for cocoa.
- C** shift left of the supply curve for cocoa.
- D** shift right of the demand curve for cocoa.

☐
☒
☐
☐

[1 mark]



1 1

Table 2 shows the total output of a small firm and the numbers of workers employed in each of four months.

Table 2

Month	Workers	Total output
January	12	2400
February	11	2300
March	14	2700
April	13	2500

Which one of the following is a true statement about production and labour productivity during this period?

A Both production and labour productivity rose between February and March

☐

B Both production and labour productivity were higher in April than January

☐

C Labour productivity rose but production fell between January and February

☒

D March had both the highest production and the highest labour productivity

☐

[1 mark]

Turn over for the next question

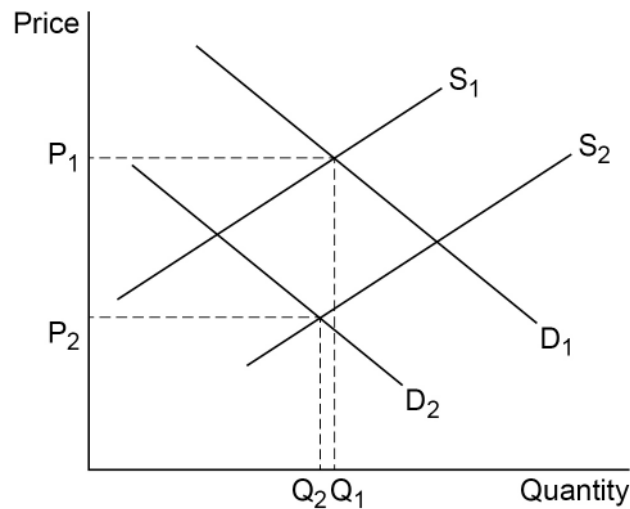
Turn over ►



1 2

Figure 2 shows supply and demand in the market for beef. D_1 shows the initial demand and S_1 the initial supply curve.

Figure 2



Which one of the following combinations of events would be most likely to cause demand to shift from D_1 to D_2 and supply from S_1 to S_2 ?

- A** A fall in the price of chicken and an increase in the price of animal feed
- B** A fall in workers' wages and a shift in preferences towards vegetarian food
- C** Higher disposable incomes and a fall in farm productivity
- D** Higher rents for farmland and health warnings about eating red meat

☐
☒
☐
☐

[1 mark]

1 3

A firm normally has some fixed and variable costs in the short run. However, in the long run

- A** all costs become fixed.
- B** fixed costs become variable.
- C** fixed costs become very small.
- D** variable costs become fixed.

☐
☒
☐
☐

[1 mark]



1 4

The price mechanism allocates resources by

- A** allowing prices to rise and ration demand when there is a surplus in the production of a good.
- B** preventing firms with monopoly power from exploiting consumers and charging a price above the competitive price.
- C** setting prices to ensure that the opportunity cost of producing a good is less than its social cost.
- D** setting relative prices to determine the quantity of factors of production used in producing each good.

☐☐☐☒**[1 mark]****1 5**

A firm manufactures and sells fresh fruit drinks. The firm sells 200 bottles of fruit drink each week; its weekly total costs are £540, which includes £300 of fixed costs. The drink is sold at £4 a bottle.

A rival firm drops out of the market and sales increase to 250 bottles a week. Other things remaining the same, profit per week increases by

- A** £65
- B** £125
- C** £140
- D** £400

☐☐☒☐**[1 mark]****1 6**

Which one of the following is most likely to increase barriers to firms wishing to enter a market?

- A** Government subsidies to small firms
- B** Higher labour mobility between different industries
- C** New technology that increases the scope for economies of scale
- D** Reduced spending on advertising by firms already in the market

☐☐☒☐**[1 mark]****Turn over ►**

1 7

The cross elasticity of demand for chips with respect to the price of rice is positive. It can be concluded that chips and rice are

A inferior goods.

☐

B jointly demanded.

☐

C normal goods.

☐

D substitute goods.

☒

[1 mark]

1 8

A firm that is a pure monopoly can result in market failure because

A consumers lack information on alternative suppliers.

☐

B products will be identical.

☐

C the firm does not experience economies of scale.

☐

D the firm's output is too low.

☒

[1 mark]



1 9

A shift left in the supply curve causes a market to be in disequilibrium at the original market price because

- A** consumers cannot buy as much as they would like.
B consumers no longer wish to buy the same quantity.
C firms are willing to supply more of the good.
D firms experience an increase in their stocks of the good.

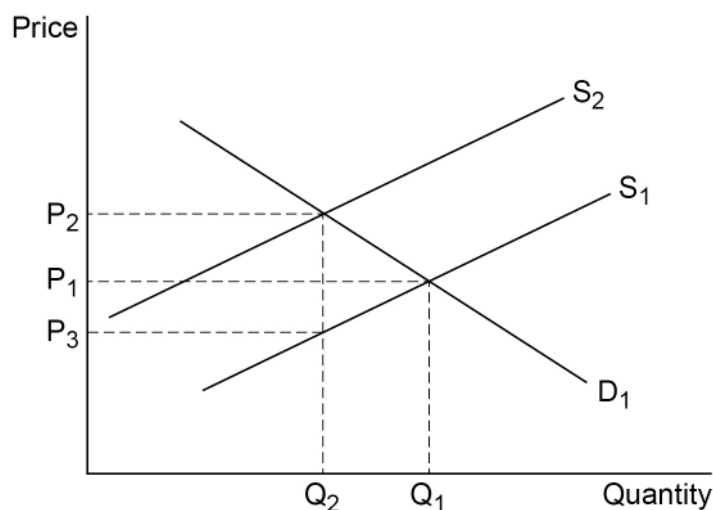
☒☐☐☐

[1 mark]

2 0

Many goods are sold in plastic packaging that has harmful effects on the environment. In **Figure 3**, D_1 and S_1 are the free market demand for and supply of plastic packaged goods. S_2 would be the supply if firms took account of the cost to the environment of plastic packaging.

Figure 3



The government decides to implement a policy that would result in production moving from the free market level at Q_1 to the social optimum at Q_2 . Which one of the following policies is most likely to achieve the government's objective?

- A** A subsidy at the rate $P_1 P_3$
B A subsidy at the rate $P_2 P_3$
C A tax at the rate $P_2 P_1$
D A tax at the rate $P_2 P_3$

☐☐☐☒

[1 mark]

END OF SECTION A

20

Turn over ►



Section B

Look at the Insert and choose to answer **EITHER** Context 1 **OR** Context 2.

Answer **EITHER** Questions 21 to 26 in the spaces below

OR

Questions 27 to 32 on pages 23 to 32 of this answer booklet.

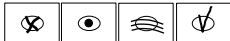
There is a total of 50 marks for either context.

Shade the circle below to indicate which context you have answered.

Context **0** **1** ☐

Context **0** **2** ☐

WRONG METHODS



CORRECT METHOD



EITHER

Context 1

Total for this context: 50 marks

WATER

Use the Insert provided to study **Questions 21 to 26** and **Extracts A, B and C**, and then answer the questions in the spaces which follow.

2 **1** Define 'profit' **Extract B** (line 9).

[3 marks]

Profit is total revenue minus total cost (TR – TC) over a given period of time. It is the reward to the entrepreneur for bearing risk; when total revenue exceeds total cost including normal profit, the firm earns supernormal (abnormal) profit.



2 2**Extract C** (line 11) states: 'a bath may use 80 litres of water but a shower half as much'.

If a litre of water costs 0.4p, calculate how much money would be saved in a week if a family of four each had a shower every day instead of a bath.

[4 marks]

Water saved per person per day = 80 - 40 = 40 litres

Water saved per week = 40 litres × 4 people × 7 days = 1120 litres

Money saved per week = 1120 × 0.4p = 448p

= £4.48 saved per week

Turn over for the next question

Turn over ►

2 3

Use **Extract A** to identify **two** significant points of comparison between the average annual water usage of households with and without a water meter.

[4 marks]

Comparison 1 *Households of 1 to 4 people use less water on average with a meter than without: a 1-person household uses 54 cubic metres a year with a meter but 66 cubic metres without, the largest saving of 12 cubic metres.*

Extra space

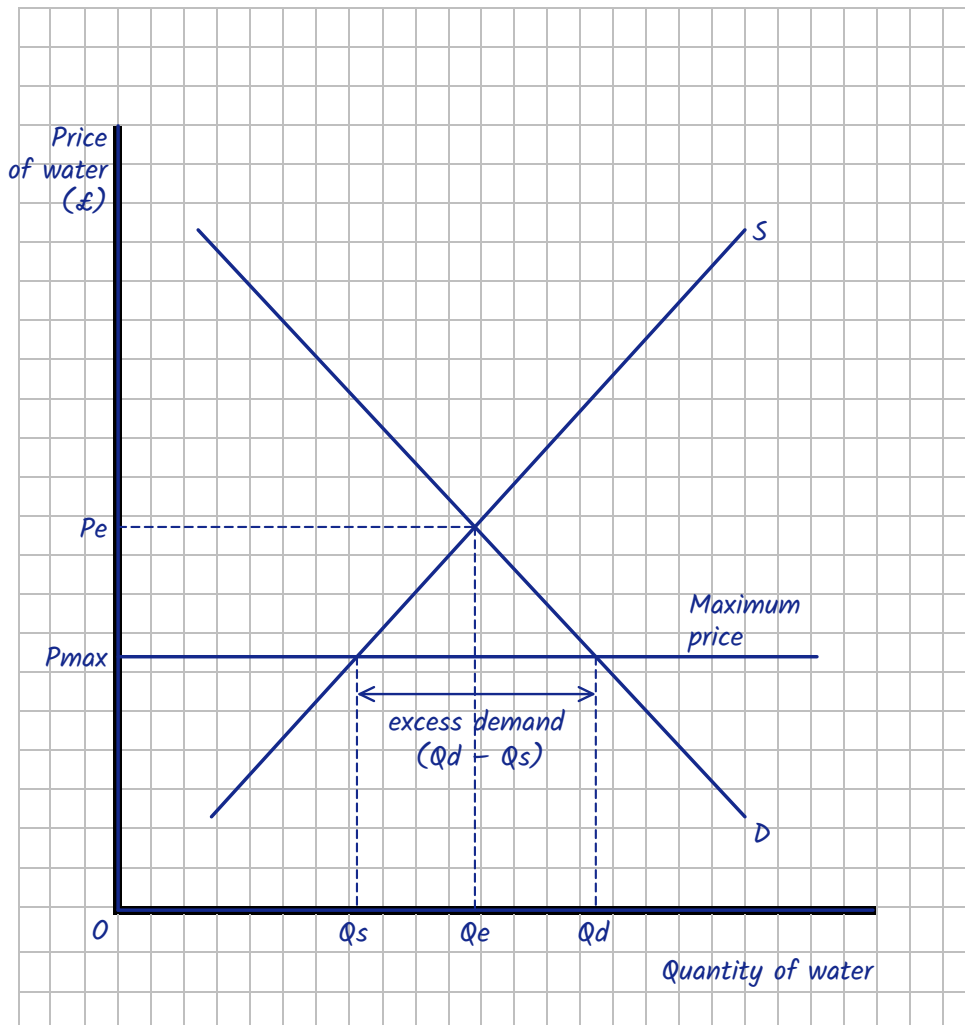
Comparison 2 *For larger households of 5 and 6 people, average annual usage is higher with a meter than without: a 6-person household uses 216 cubic metres with a meter compared with 200 cubic metres without, an increase of 16 cubic metres.*

Extra space



2 4**Extract C** (line 20) states: 'Perhaps a maximum price should be set for water'.

Draw a diagram to show the impact on the market for water of setting a maximum price below the equilibrium.

[4 marks]

Turn over for the next question

Turn over ►



2 5

Extract B (lines 13–14) states: ‘Most water (and sewerage) services are not provided by competitive markets... Only businesses can choose their water supplier’.

Explain how firms in the water industry could compete to attract businesses or other customers.

[10 marks]

A competitive market is one in which several firms supply customers who can choose between them, so firms must compete on price or non-price factors to win sales. Since business customers can choose their water retailer (Extract B), retailers must compete for them even though the water itself still comes through the regional water company's pipe network.

Price competition: water is a homogeneous product, as water from one retailer is identical to water from another. The demand for any one retailer's water is therefore highly price elastic, so a retailer that cuts its price per cubic metre slightly below its rivals' could attract many business customers and increase its market share and total revenue. Retailers could offer discounts for large users such as factories, hotels and farms, a lower standing (fixed) charge, or fixed-price contracts that protect businesses from future price rises. If competition were extended to households, as for gas and electricity, firms could offer cheaper household tariffs too, and the threat of losing customers would push prices towards costs and reduce the supernormal profit that Ofwat currently has to limit.

To cut prices and still make a profit, firms must reduce their costs. A retailer could become more productively efficient by cutting leakage, automating billing and reducing administration costs, or gain economies of scale by merging with other retailers and buying water in bulk from the

Extra space *water companies. Lower average costs allow lower prices while maintaining profit margins, and the pressure of competition reduces X-inefficiency.*



Non-price competition: because the water is identical, firms can also compete on the quality of service. Examples include accurate, simple online billing; smart meters that give businesses real-time data on their usage; fast responses to leaks and supply interruptions; dedicated account managers for large customers; and water efficiency audits that help firms use less water and so cut their bills. A retailer could bundle water and sewerage with gas and electricity in one contract and one bill, saving businesses time. Firms can also promote their brand through advertising, for example stressing environmental credentials such as reduced leakage, which appeals to businesses that want to appear sustainable, and use loyalty discounts or longer contracts to retain customers.

By offering better service, a firm shifts the demand for its service to the right and makes it less price elastic, so it can attract and keep customers without cutting its price, protecting its profit. However, the scope for competition is limited because all retailers use the same pipes and the same regional supply, so firms can differentiate mainly through price, billing and customer service rather than the product itself.

Turn over ►



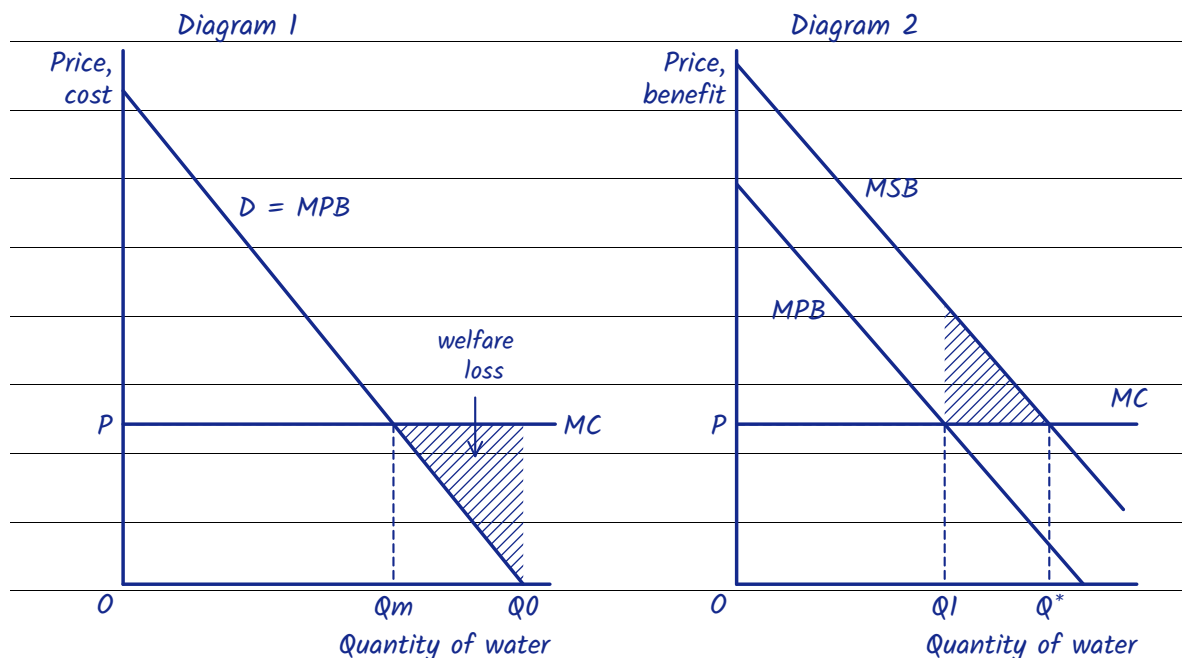
2 6

Extract C (line 9) states: 'When people pay according to quantity used, they are less likely to be wasteful'.

Use the extracts and your knowledge of economics to assess whether all households should pay according to the amount of water they use.

[25 marks]

Water is a basic human need and a scarce resource: Extract B notes that land, labour and capital, including reservoirs and pipe networks, are needed to make it fit for use. At present households in older homes without a meter pay according to the rateable value of their property, while metered households pay a fixed charge plus a charge for each unit used (Extract C).



The main argument for metering is that for an unmetered household the marginal price of an extra litre is zero. A rational consumer uses water until its marginal private benefit is zero, at Q_0 in Diagram 1, even though each extra litre has a positive marginal cost of extraction, treatment and pumping (MC). Every unit between Q_m and Q_0 costs more to supply than it is worth to the user, so there is overconsumption and a welfare loss (hatched). With a meter, the price per unit P reflects marginal cost, so consumption



falls to Q_m where $MPB = MC$ and allocative efficiency improves. This supports Extract C's claim that people who pay by quantity 'are less likely to be wasteful': homes with meters use on average 10% to 15% less water. The savings for households can be significant. A family of four switching from baths to showers would save 1120 litres, worth £4.48 a week or about £233 a year, and Extract C notes that they would also save on energy bills because less water is heated. There are wider benefits too: less water extracted reduces pressure on reservoirs in 'areas of serious water stress' such as southern England, and using less energy to heat water cuts carbon emissions, an external benefit to society. In the long run, lower demand could also delay the need to build costly new reservoirs, the cost of which would otherwise be passed on to customers in higher bills.

Metering is also arguably fairer. Under rateable values, a single person in an expensive house pays more than a large family in a cheap house regardless of how much each uses, and non-metered homes pay nothing extra to water the garden. Paying by use links each bill to the cost a household imposes on the system, as already happens with gas and electricity.

However, Extract A suggests that the effect of meters on usage may be smaller than claimed. Metered households of 1 to 4 people do use less water, but the difference is small: a 4-person household uses 164 cubic metres a year with a meter and 165 without, only 1 cubic metre less. For 5 and 6 person households usage is actually higher with a meter, 216 compared with 200 cubic metres for six people. This suggests that the demand for water is very price inelastic, because it is a necessity with no close substitutes and the bill is a small share of income, so charging per unit changes behaviour only a little. The data may also reflect self-selection: households that chose a meter may already have been low users, so the 10% to 15% saving may

Turn over ►



Extra space *overstate the effect of compulsory metering.*

There are also strong arguments against making every household pay by use. Water has the characteristics of a merit good: people may undervalue its private benefits, such as drinking two litres a day and good hygiene, and it has external benefits, as hygiene reduces the spread of disease. As Extract C warns, the poorest, particularly large families in homes with a low rateable value, could end up with higher bills and may cut their use too much, harming their health. In Diagram 2, if metered households consume where $MPB = P$, consumption is Q_1 , below the socially optimal level Q^* where $MSB = P$, creating a welfare loss from underconsumption (hatched). Metering is also regressive, since water bills take a larger share of the income of poor households, so a policy that improves efficiency may worsen equity.

In addition, installing meters in every older home has a significant cost in labour and capital, which could outweigh the benefits where usage falls by only 1 cubic metre a year. Metering also does not tackle the underlying problem that each firm is a regional monopoly: households have no choice of supplier (Extract B), so without effective regulation firms could set the unit price well above marginal cost and earn supernormal profit from consumers whose demand is inelastic. Metering could then become a means of exploiting consumers, a case of government failure replacing market failure.

These problems can be reduced. Vulnerable households could be protected by social tariffs, such as a capped bill for large low-income families, or by a rising block tariff in which the first litres needed for drinking, cooking and washing are cheap and higher prices apply only to discretionary uses such as watering gardens. Ofwat's requirement that firms cut the average bill by £50 over five years shows that regulation can limit prices. Alternatively, more competition, as already exists for businesses and for gas and electricity, could



lower prices, while a maximum price could protect consumers, although if set below equilibrium it would create excess demand and could reduce the investment needed to maintain the network.

On balance, I think that most households should pay according to the amount of water they use, because a price per unit gives an incentive to conserve a scarce resource and is fairer than charges based on property values. The case is strongest in areas of serious water stress, where the opportunity cost of water is highest, which is why seven companies in southern England have already been allowed to introduce compulsory metering. However, Extract A shows that the effect on usage is small, and negative for large households, so whether it is worthwhile depends on the cost of fitting meters compared with the savings and on how price elastic demand really is. It should not be applied to all households without protection: metering should be combined with a social tariff or a free basic allowance for low-income and large families, so that water is not underconsumed as a merit good, and with strong regulation by Ofwat to stop firms exploiting their monopoly power. With these safeguards the long-run benefits of metering are likely to outweigh its costs.

Turn over ►



[illegible]

Do **not** answer Context 2 if you have answered Context 1.

OR

Context 2

Total for this context: 50 marks

ALCOHOL

Use the Insert provided to study **Questions 27 to 32** and **Extracts D, E and F**, and then answer the questions in the spaces which follow.

2 7 Define 'income' **Extract F** (line 10).

[3 marks]

Income is a flow of money received by an economic agent, such as an individual, household or firm, over a period of time, for example wages received each month in exchange for supplying labour, a factor service.

2 8 According to **Extract E** (lines 6–7), the price of a standard bottle of whisky had to rise from £10 to £14 in a discount supermarket, as a result of minimum unit pricing (MUP).

If the demand for whisky fell by 6.3% in the first year as a result of the price change, calculate the price elasticity of demand for whisky, to **two** decimal places.

[4 marks]

% change in price = $(14 - 10) \div 10 \times 100 = +40\%$

PED = % change in quantity demanded $\div$ % change in price

PED = $-6.3 \div 40 = -0.1575$

PED = -0.16 (to 2 decimal places), so demand for whisky is price inelastic.

Turn over ►



2 9

Use **Extract D** to identify **two** significant features of the affordability of alcohol index for the UK, over the period shown.

[4 marks]

Feature 1 *Affordability fell every year from 2008 to 2011, from 160.0 to its lowest point of 149.0 on the index, a fall of 11.0 index points (6.9%).*

Extra space

Feature 2 *Affordability then rose every year from 2011 to its highest point of 163.8 on the index in 2017, a rise of 14.8 index points (9.9%), so alcohol was more affordable in 2017 than in 2008 (160.0).*

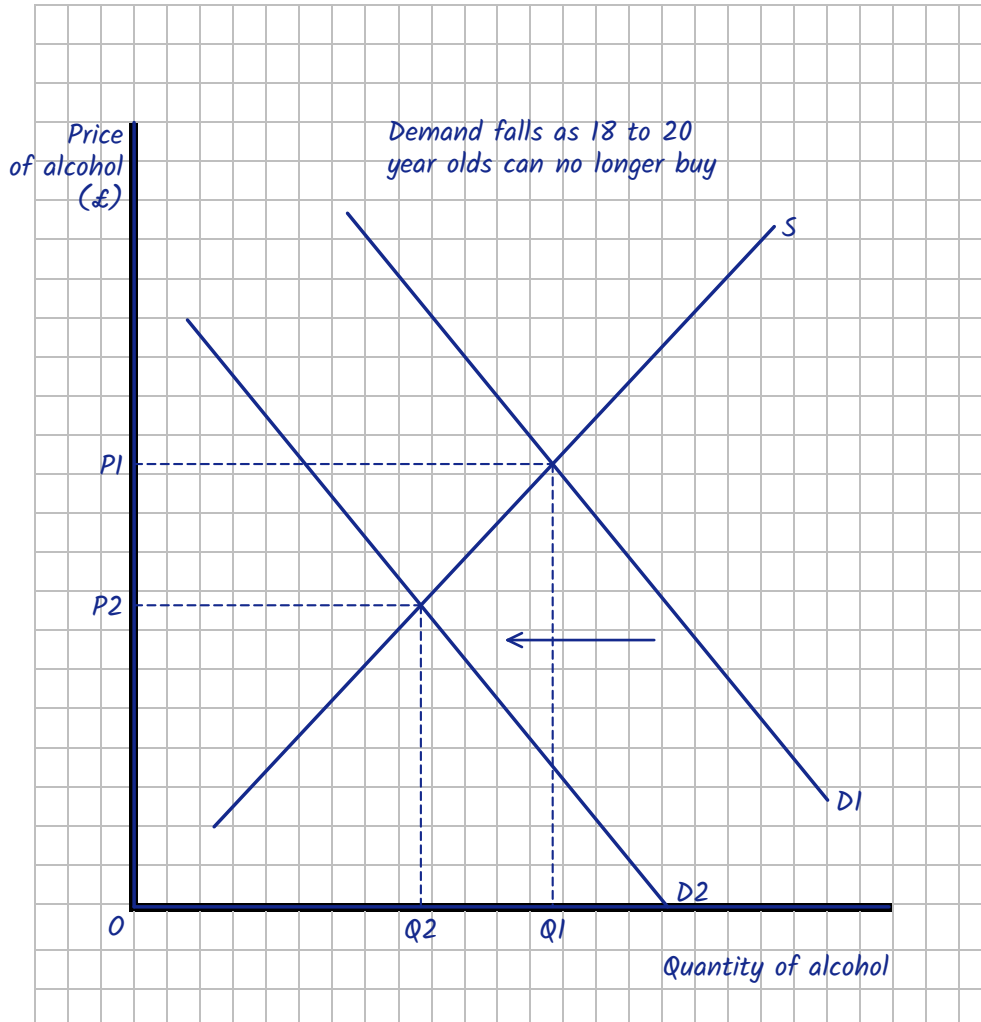
Extra space



3 0

Extract E (lines 2–3) states: 'The minimum age for buying alcohol is 18, although in some countries, such as the US, the minimum age is 21'.

Draw a diagram to show the impact on the market for alcohol of raising the age for buying alcohol in the UK from 18 to 21.

[4 marks]

Turn over for the next question

Turn over ►



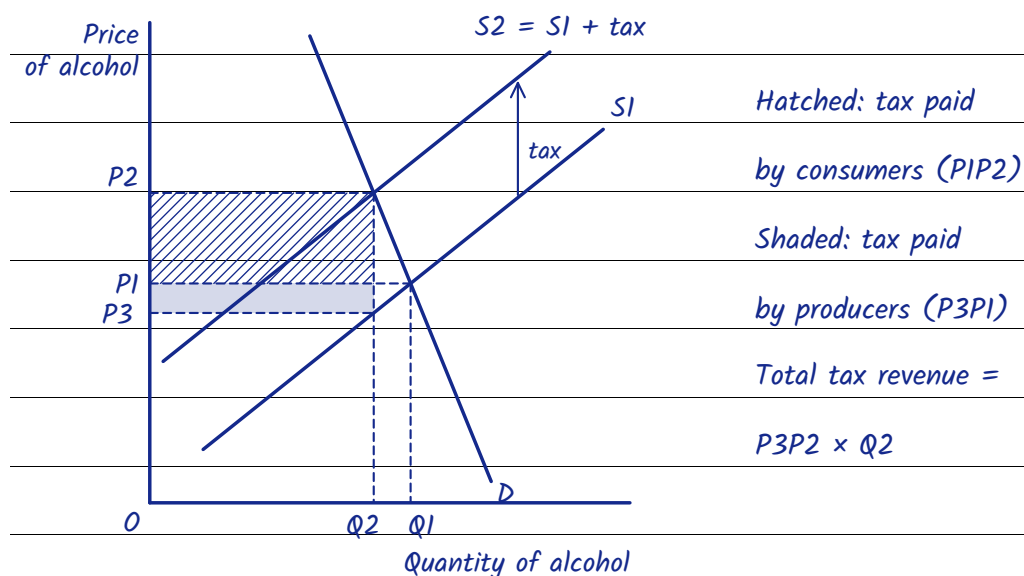
3 1

Extract E (lines 1–2) states: ‘alcohol has traditionally been viewed as a demerit good, subject to high indirect taxes’.

Explain the likely effects of imposing indirect taxes on alcohol.

[10 marks]

An indirect tax is a tax on spending, such as excise duty on alcohol, which is paid to the government by producers but can be passed on to consumers through higher prices. As alcohol is a demerit good, the tax aims to make drinkers pay closer to the full social cost of their consumption.



As shown in the diagram, a specific tax raises producers' costs, so supply shifts left from S_1 to S_2 by the amount of the tax. The price rises from P_1 to P_2 and the quantity falls from Q_1 to Q_2 . Because demand for alcohol is price inelastic (the PED for whisky is -0.16), the fall in quantity is small and most of the tax is passed on to consumers, who pay PIP_2 per unit, while producers bear only P_3P_1 . The government receives tax revenue of $P_3P_2 \times Q_2$, which is large precisely because demand is inelastic, and which could fund the NHS or treatment for alcohol misuse.

Consumers lose consumer surplus as they pay more. Lower consumption reduces the private costs of drinking, such as damage to health, and the



negative externalities imposed on third parties, such as alcohol-related crime (46% of violent crime in Scotland) and NHS costs. If the tax equals the marginal external cost, output falls to the socially optimal level and the welfare loss from overconsumption is removed. However, with inelastic demand heavy drinkers may keep drinking and simply spend more, leaving less for food or heating. The tax is also regressive, taking a larger share of the income of poorer households.

Producers and retailers receive a lower price net of tax (P_3) and sell less, so their revenue and profit fall, which could cause job losses in breweries and pubs, although firms may respond by selling lower-strength drinks.

Supermarkets may absorb part of the tax and use alcohol as a loss leader, weakening the effect on price. If the tax is much higher than in other countries, smuggling, illegal sales and cross-border shopping may increase, reducing tax revenue. Local communities may benefit from less crime and anti-social behaviour, so overall the effects depend mainly on the size of the tax and the price elasticity of demand.

Turn over ►



3 2

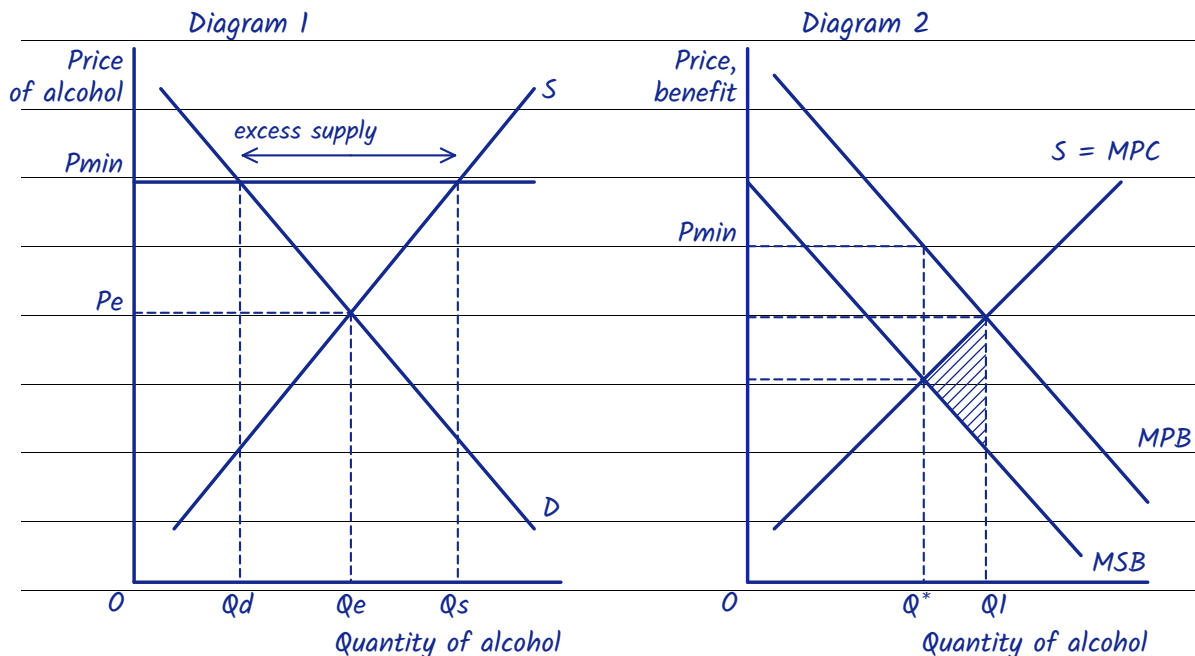
Extract F (lines 20–21) states: ‘Cheap alcohol is wrecking lives and livelihoods in England as well as Scotland’.

Use the extracts and your knowledge of economics to assess whether a minimum price for alcohol should be introduced in England and Northern Ireland.

[25 marks]

A minimum price is a legal price floor below which a good cannot be sold.

Minimum unit pricing (MUP), introduced in Scotland in May 2018, sets a floor of 50p per unit of alcohol, so a 70cl bottle of whisky must cost at least £14 and a two-litre bottle of cider at least £5 (Extract E).



Alcohol is a demerit good. Consumers underestimate the private costs of drinking, such as damage to health and addiction, because of imperfect information, and drinking also creates negative externalities for third parties, such as NHS costs, crime and lost output. In Scotland, alcohol misuse was estimated to cost £3.6 billion a year, about £900 per adult, and 46% of violent crime in 2017/18 was alcohol-related. In Diagram 2 the marginal social benefit (MSB) lies below the marginal private benefit (MPB), so the



free market quantity Q_1 is above the social optimum Q^* , causing a welfare loss (hatched). Extract D shows the problem has grown: alcohol has become more affordable, with the index rising from 149.0 in 2011 to 163.8 in 2017 (1980 = 100).

As shown in Diagram 1, a minimum price set above the equilibrium price P_e raises the price paid and reduces the quantity demanded from Q_e to Q_d , with excess supply of $Q_s - Q_d$. If P_{min} is set at the level where consumers demand Q^* (Diagram 2), consumption moves to the social optimum and the welfare loss is removed. MUP targets cheap, high-strength alcohol such as cider, which heavy and young drinkers buy, while leaving the price of more expensive drinks unchanged.

The evidence from Scotland is encouraging. Scottish adults bought on average 1.2 fewer units per week, a fall of 7.5% that was more than double the figure expected, and sales of previously cheap cider fell by 36%.

Low-income households cut back the most, and there was no increase in illegal activity such as smuggling. If England, with 23 000 alcohol-related deaths a year, achieved similar results, the fall in health and crime costs could be large, especially in the north east, which faces similar problems to Scotland.

However, the effectiveness of MUP depends on the price elasticity of demand. The PED for whisky is only -0.16 , so a 40% rise in price cut the quantity demanded by just 6.3%. Demand is inelastic because alcohol is habit-forming, and Extract F notes that for those addicted to alcohol price is unlikely to be the key factor, so the heaviest drinkers, who cause the largest external costs, may barely change their behaviour. Instead they may spend more, an extra 61p per adult per week on average in Scotland, leaving less for food and heating and harming their families. Wine sales fell by only

Turn over ►



Extra space 3.7%.

MUP is also regressive. It raises the price of the cheap alcohol bought mainly by low-income households, while moderate drinkers on higher incomes are largely unaffected, which may seem unfair to responsible poorer drinkers.

On the other hand, the poorest and most vulnerable account for many alcohol-related deaths, so they may gain most from improved health.

There is also a risk of government failure. Some Scots crossed the border to buy alcohol in England or used English home delivery services, and there was stockpiling before the law came in. Introducing MUP in England would remove this loophole, but Northern Ireland shares a land border with the Republic of Ireland, where MUP is only under consideration, so cross-border shopping and smuggling could rise there. The evidence is also mixed: another survey found alcohol-related deaths rose by 16 in 2018 and that more alcohol was sold in the first nine months, and critics argue it is too early to judge the effect on health. Unlike a tax, the extra revenue from MUP goes to retailers as windfall profit rather than to the government to fund treatment. The government also has imperfect information about where to set the price: too low and it has little effect, too high and it penalises moderate drinkers and encourages illegal sales.

There are alternatives. Higher indirect taxes also raise prices and, unlike MUP, raise revenue for the NHS or addiction services, but supermarkets can absorb tax rises and sell alcohol as a loss leader, which MUP prevents, and taxes raise the price of all drinks including expensive ones. Regulation such as raising the minimum age to 21, restricting advertising or licensing hours, and better information through education and health warnings tackles the information failure directly, but these work slowly and are hard to enforce. MUP is likely to work best alongside these policies rather than instead of



them.

On balance, I think a minimum price should be introduced in England and Northern Ireland. Alcohol is a demerit good with large external costs, it has become more affordable, and the early evidence from Scotland, a 7.5% fall in units bought and a 36% fall in cheap cider sales, shows that MUP targets the cheapest and most harmful products effectively. The case is strongest in England, where 23 000 people die from alcohol each year and a common floor would end cross-border shopping from Scotland. However, because demand is inelastic, especially for dependent drinkers, MUP alone will not solve the problem: the level, for example 50p per unit, should be reviewed as evidence on health emerges, and it should be combined with addiction treatment and education. In Northern Ireland, coordination with the Republic of Ireland is needed to limit cross-border shopping. Overall, the long-run benefits of reduced harm are likely to outweigh the costs.

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