

Please write clearly in block capitals.

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Candidate signature _____

I declare this is my own work.

INTERNATIONAL AS ECONOMICS

Unit 1 The Operation of Markets, Market Failure and the Role of Government

Friday 5 January 2024

07:00 GMT

Time allowed: 1 hour 45 minutes

Materials

For this paper you must have:

- the Source Booklet, provided as an insert (enclosed)
- a calculator, which you are expected to use where appropriate.

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.
- You must answer the questions in the spaces provided. Do **not** write outside the box around each page or on blank pages.
- Do **not** write in the Source Booklet.
- 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 marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- You may use a bilingual dictionary for this exam.
- You may **not** use an English dictionary.

For Examiner's Use	
Question	Mark
1–15	
16	
17	
18	
19	
20	
21	
TOTAL	



J A N 2 4 E C O 1 0 1

Section A

Answer **all** questions in the spaces provided.

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

When a good has more than one use, this is known as

[1 mark]

A competitive demand.



B composite demand.



C excess demand.



D joint demand.



0 2

Shortages of grain have increased its price in recent years.

Table 1 uses an index to measure changes in the price of grain.

Table 1

Year	Price index
2018	100
2019	105
2020	120
2021	125
2022	140

Which one of the following can be concluded from the data?

[1 mark]

- A** The price of grain rose by 12% between 2021 and 2022. ☒
- B** The price of grain rose by 14% between 2020 and 2022. ☐
- C** The price of grain rose by 15% between 2019 and 2020. ☐
- D** The price of grain rose by 25% between 2019 and 2022. ☐

0 3

Which one of the following statements describes the rationing function of the price mechanism?

[1 mark]

- A** Higher prices will attract more resources ☐
- B** Lower prices will reduce supply ☐
- C** Price changes provide information to consumers ☐
- D** Quantity demanded rises when prices fall ☒

Turn over ►



0 4

Table 2 shows the income elasticity of demand for four goods.

Table 2

Good	Income elasticity of demand
W	+2.0
X	+0.5
Y	−0.5
Z	−2.0

Which one of the following may be concluded from the data?

[1 mark]

- A** As income falls, the demand for Good W will fall by a smaller percentage.
- B** As income falls, the demand for Good X will rise by a larger percentage.
- C** As income rises, the demand for Good Y will fall by a larger percentage.
- D** As income rises, the demand for Good Z will fall by a larger percentage.

☐
☐
☐
☒


0 5**Table 3** shows the costs and output for a firm.**Table 3**

Total fixed costs (\$)	Average variable cost (\$)	Output
5520	120	240

What is the average total cost of producing 240 units of output?

[1 mark]**A** \$23.00☐**B** \$23.50☐**C** \$120.00☐**D** \$143.00☒**0 6****Table 4** shows the quantities of bicycles that would be demanded and supplied at different prices in a month.**Table 4**

Price of a bicycle (\$)	Quantity demanded (per month)	Quantity supplied (per month)
250	36 000	30 000
300	33 000	33 000
350	29 000	35 000
400	25 000	40 000

After a rise in production costs, supply falls by 6000 at each price. What is the new equilibrium price?

[1 mark]**A** \$250☐**B** \$300☐**C** \$350☒**D** \$400☐**Turn over ►**

0 7

In a free market economy, merit goods

[1 mark]**A** are overconsumed.☐**B** are underproduced.☒**C** have greater private benefits than social benefits.☐**D** have greater social costs than private costs.☐**0 8**

Which one of the following is an example of capital as a factor of production?

[1 mark]**A** Delivery lorries☒**B** Money in a business☐**C** Savings in the bank☐**D** Stocks of oil☐

0 9**Table 5** shows total worldwide car sales in 2021 for the world's largest car producers.**Table 5**

Car producer	Car sales (thousands)
Ford	5 386
General Motors	7 718
Nissan	5 176
Toyota	10 742
Volkswagen	10 975
Other producers	9 599
Total	49 596

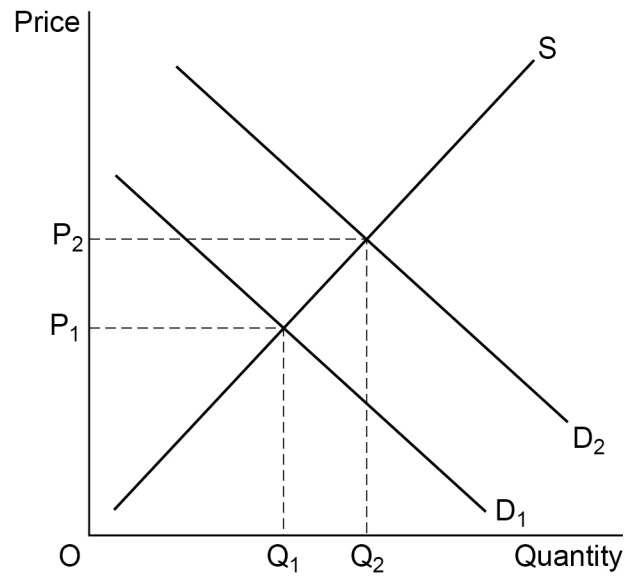
What is the three-firm concentration ratio, to the nearest whole number?

[1 mark]**A** 37%☐**B** 59%☒**C** 63%☐**D** 74%☐**Turn over for the next question****Turn over ►**

1 0

Figure 1 shows the original market demand (D_1) and supply (S) curves for chocolate.

Figure 1



Which one of the following is most likely to cause the demand curve for chocolate to shift from D_1 to D_2 ?

An increase in

[1 mark]

A an indirect tax on chocolate.

☐

B the price of a complementary good.

☐

C the price of a substitute good.

☒

D the price of chocolate.

☐


1 1**Table 6** shows features of four different markets.

Which one of the following combinations is most likely to give a firm a high degree of monopoly power?

[1 mark]**Table 6**

Market	Barriers to entry	Number of competitors	Degree of product differentiation
A	High	High	Low
B	High	Low	High
C	Low	High	High
D	Low	Low	Low

☐☒☐☐**1 2**

The price of a product falls from \$17 to \$15, resulting in a fall in total revenue from \$170 to \$150.

What is the price elasticity of demand for this change in price?

[1 mark]**A** -10☐**B** -1☐**C** 0☒**D** +1☐**1 3**

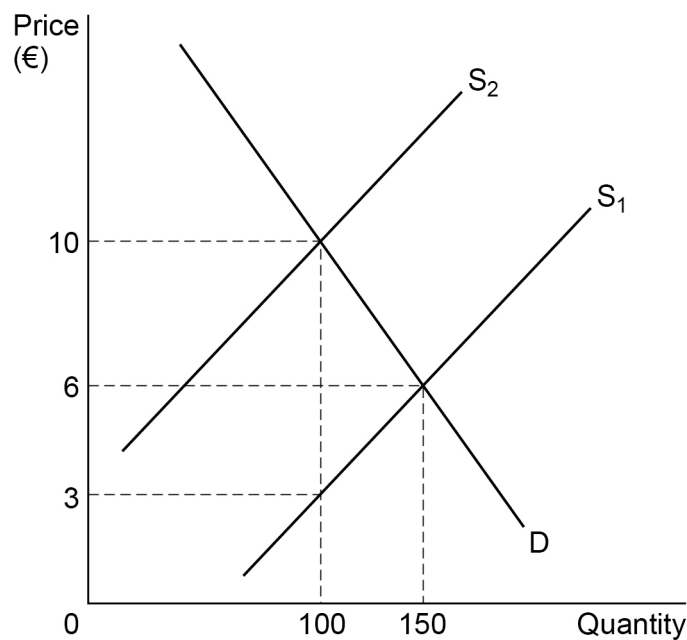
Which one of the following is most likely to increase labour productivity in an industry?

An increase in

[1 mark]**A** capital.☒**B** demand for the product.☐**C** output.☐**D** the number of workers.☐**Turn over ►**

1 4

In the short run, when output rises, average fixed costs

[1 mark]**A** decrease.☒**B** decrease then increase.☐**C** do not change.☐**D** increase.☐**1 5****Figure 2** shows the original market demand (D) and supply (S_1) curves for a product.**Figure 2**

The government places an indirect tax on the product which shifts the supply curve from S_1 to S_2 .

How much of the total tax revenue is paid by the consumers?

[1 mark]**A** €300☐**B** €400☒**C** €600☐**D** €700☐

Section B

Look at the Source Booklet and answer **all** questions in the spaces provided.

Do **not** write in the Source Booklet.

1 6 . 1 Define 'free market economy' (**Extract C**, line 17).

[3 marks]

A free market economy is one in which decisions about what to produce, how to produce it and who gets the output are made by buyers and sellers through the price mechanism, with no government involvement. Prices are determined by the interaction of demand and supply, and these allocate resources.

1 6 . 2 Define 'imperfect information' (**Extract B**, line 6).

[3 marks]

Imperfect information is when buyers and/or sellers do not have all the necessary information, or have inaccurate information, needed to make the correct decision about a product, for example consumers not knowing the full environmental cost of single-use plastic.

Turn over for the next question

Turn over ►



1 7

You are advised to show your working for the calculations below.

1 7 . 1

Use **Extract A (i)** to calculate single-use plastic waste per person in Australia as a percentage of single-use plastic waste per person in Spain in 2019.

Give your answer to the **nearest whole number**.

[2 marks]

Australia = 59kg per person, Spain = 34kg per person

$59 \div 34 \times 100 = 173.529...\%$

Answer = 174%

1 7 . 2

Extract C (lines 3–5) states: 'In 2021, the charge was increased from £0.05 to £0.10. This increase in price helped to further reduce the use of plastic bags from 627 million in 2020 to 496 million in 2021.'

Calculate the price elasticity of demand for plastic bags between 2020 and 2021.

Give your answer to **two** decimal places.

[4 marks]

% change in quantity demanded = $(496m - 627m) \div 627m \times 100 = -20.89\%$

% change in price = $(£0.10 - £0.05) \div £0.05 \times 100 = +100\%$

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

$= -20.89 \div 100 = -0.2089...$

PED = -0.21



1 8

Extract A shows single-use plastic waste and income per person for selected countries in 2019.

1 8 . 1

Explain how higher income per person may lead to more single-use plastic waste.

[6 marks]

Income per person is the total income of a country divided by its population, so

higher income per person means that, on average, each person has more purchasing power and can afford to buy and consume more goods and services.

Most of the goods that come in single-use plastic, such as bottled drinks, packaged snacks, ready meals, takeaway food containers, cosmetics and goods bought online, are normal goods with a positive income elasticity of demand. As income per person rises, demand for these goods increases, so the demand curve shifts to the right and a larger quantity is bought.

The demand for single-use plastic is a derived demand: it is demanded because of the production and consumption of these other goods. When people buy more packaged goods, producers need more plastic packaging, so the demand for single-use plastic also rises and more of it ends up as waste once the goods are consumed.

Higher incomes also change people's habits. People with higher incomes often value their time more highly, so they buy convenience products rather than cooking from fresh ingredients and use food delivery services more, which use a lot of single-use

Extra space *containers, cutlery and bags. They may also buy more disposable items, such as coffee cups and bottled water, instead of reusable ones. As a result, countries with higher income per person are likely to generate more single-use plastic waste per person.*

Turn over ►



1 8 . 2

To what extent do the data suggest that higher income per person leads to more single-use plastic waste?

Use the data in **Extract A** to help support your answer.

[6 marks]

The data provide some support. China has both the lowest income per person (\$16 652) and the lowest single-use plastic waste per person (18kg). The USA has the highest income per person (\$65 095) and the second highest waste per person (53kg), and Australia has the second highest income (\$51 909) and the highest waste (59kg). This suggests a direct relationship.

However, the relationship is not exact. South Korea and the UK have the same waste per person (44kg) even though the UK's income per person is higher (\$49 661 compared with \$43 410). France has a much higher income per person than Spain (\$50 501 compared with \$43 069) but only slightly more waste (36kg compared with 34kg). Also, income per person in the USA is about 3.9 times that in China, but waste per person is only about 2.9 times higher, so waste does not rise in proportion to income.

The data are only for 2019 and a few selected countries, and correlation does not prove causation. Other factors matter, such as consumer habits, government policies like plastic bag charges, and how far each country is moving away from plastic packaging for environmental reasons.

Extra space Overall, the data suggest that higher income per person does tend to lead to more single-use plastic waste, but only to a certain extent, as it is clearly not the only factor.



1 9

Extract B (lines 4–5) states: ‘Each year, there are 300 million tonnes of plastic waste produced around the world, half of which comes from single-use items.’

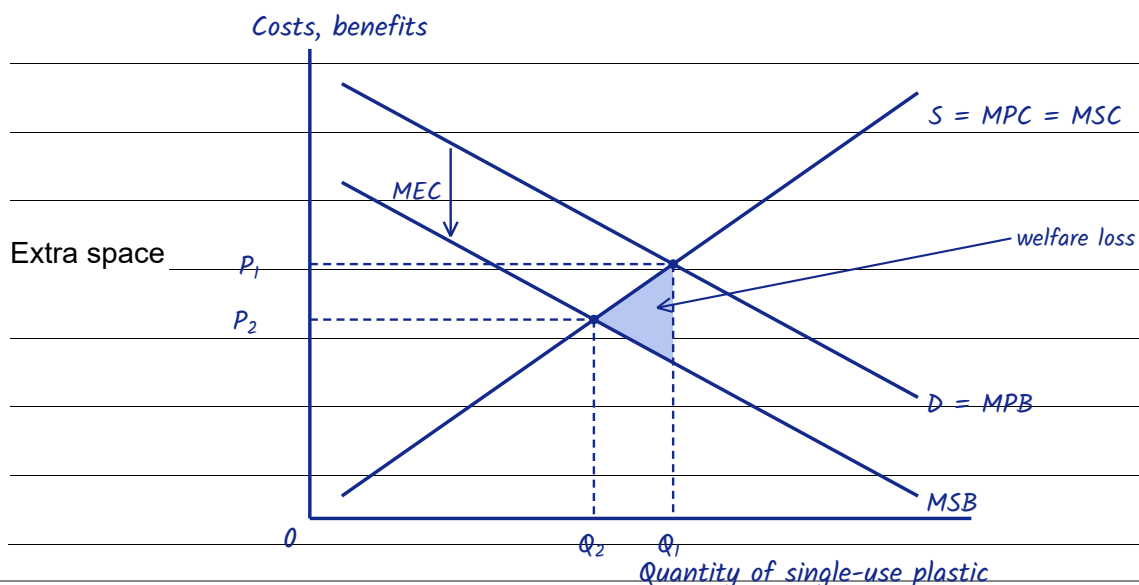
With the help of a diagram, explain why the free market output for single-use plastic may be different from the socially optimum output if there are environmental costs that result from consumption.

[9 marks]

The free market output is where consumers buy according to their marginal private benefit (MPB), shown by the demand curve, and producers supply according to their marginal private cost, so output is Q_1 where $MPB = MPC$. The socially optimum output is where marginal social benefit (MSB) equals marginal social cost (MSC), at Q_2 , which maximises society's welfare.

When single-use plastic is consumed, there are environmental costs that fall on third parties: a negative consumption externality. Extract B states that 300 million tonnes of plastic waste are produced each year, half from single-use items. This waste goes to landfill, pollutes rivers and oceans, harms wildlife and may be burned, releasing greenhouse gases. These external costs are not paid by consumers, so $MSB = MPB - \text{marginal external cost (MEC)}$, and MSB lies below MPB in the diagram.

Consumers ignore the external costs when deciding how much to buy, and many have imperfect information about the damage caused, so they consume at Q_1 , where $MPB = MPC = MSC$. At this output, for units between Q_2 and Q_1 , the MSC is greater than



Turn over ►



the MSB, so these units reduce society's welfare. Single-use plastic is therefore overconsumed and overproduced: the free market output Q_1 is greater than the socially optimum output Q_2 , resources are misallocated and there is a welfare loss shown by the shaded triangle. This is market failure, and the free market price P_1 is too low as it does not reflect the full cost to society.

9

2 0

Extract B (lines 14–16) states: 'In countries such as the USA and South Korea, where food is generally cheap relative to people's incomes, the price elasticity of demand for having food delivered is low.'

Analyse reasons why the price elasticity of demand for having food delivered is likely to be inelastic.

[12 marks]

Price elasticity of demand (PED) measures the responsiveness of quantity demanded to a change in price, calculated as the percentage change in quantity demanded divided by the percentage change in price. Demand is price inelastic when PED is between 0 and -1 , so a change in price leads to a proportionately smaller change in quantity demanded. If delivery firms raise their prices, the number of food deliveries falls by only a small percentage and total revenue rises.

The first reason is the proportion of income spent on the good. Extract B explains that in countries such as the USA and South Korea, food is generally cheap relative to people's incomes. Since a single delivered meal or delivery fee takes up only a small percentage of a consumer's income, a rise in its price has little effect on their real income and spending power. Consumers barely notice a price increase of, for example, 10% on a delivery fee, so they continue to order and demand is inelastic. This is why the effect is strongest in high-income countries.

The second reason is the lack of close substitutes. The main alternatives are cooking at



home, collecting a takeaway or eating in a restaurant, but these are not close substitutes for many consumers as they all require time and effort. Busy workers or people without cooking skills, cars or kitchens may see delivery as the only convenient option. The fewer and less close the substitutes, the less consumers will switch away when the price rises, so PED is low. Many delivery apps also charge similar prices, so switching platform does not avoid a general price rise.

The third reason is habit and changing consumer behaviour. During the pandemic many people got used to ordering food online, and changing work patterns, such as working from home and long working hours, mean many now see food delivery as a necessity rather than a luxury. Goods that are habitual, or regarded as necessities, have inelastic

Extra space demand because consumers continue to buy them even when prices rise.

Delivery apps reinforce this through loyalty schemes and subscriptions, such as free delivery memberships, which make consumers less sensitive to the price of each order.

Fourth, technological advances have made having food delivered very easy: consumers can order in seconds from a smartphone app with stored payment details, track the order and choose from a wide range of restaurants. This convenience increases the value consumers place on the service relative to its price, making them less price sensitive. In addition, in countries such as South Korea and the USA, the high density of restaurants and couriers in cities means deliveries are fast and reliable, so delivery becomes part of everyday life.

However, the degree of inelasticity depends on the consumer and the time period.

Lower-income consumers, for whom delivery fees are a larger share of income, are likely to have more price elastic demand, and over the long run consumers may find substitutes. Overall, though, the small share of income, the lack of close substitutes, habit and convenience mean that demand for having food delivered is likely to be price inelastic.



2 1

Extract C (line 1) states: 'Governments across the world are looking at ways to reduce waste from single-use plastic.'

Use the extracts and your knowledge of economics to assess policies governments could use to reduce waste from single-use plastic.

[20 marks]

In a free market the price mechanism allocates resources, but the market for single-use plastic fails because of negative externalities in production and consumption. Producers and consumers ignore the costs of pollution, landfill and damage to oceans and wildlife, and many consumers have imperfect information about this damage. As Extract B shows, 300 million tonnes of plastic waste are produced each year, half of it from single-use items, and the rise of convenience products and food delivery has increased this. Plastic is overconsumed and overproduced, so there is a case for government intervention.

One policy is an indirect tax on single-use plastic, which increases firms' costs of production and shifts supply from S_1 to $S_1 + \text{tax}$. As the diagram shows, the price rises from P_1 to P_2 and quantity falls from Q_1 to Q_2 , closer to the social optimum, so the externality is internalised (the polluter pays principle). The government also gains tax revenue, the shaded area, which can be used to fund recycling or clean-up. However, the effectiveness depends on the price elasticity of demand. Demand for many plastic items is price inelastic, as they are a small part of the cost of the goods they package and there are few cheap substitutes, so quantity falls by only a small amount and the tax mainly raises revenue. It is also difficult to value the external cost accurately, so the tax may be set at the wrong level, and it is regressive, taking a larger share of the income of poorer households.

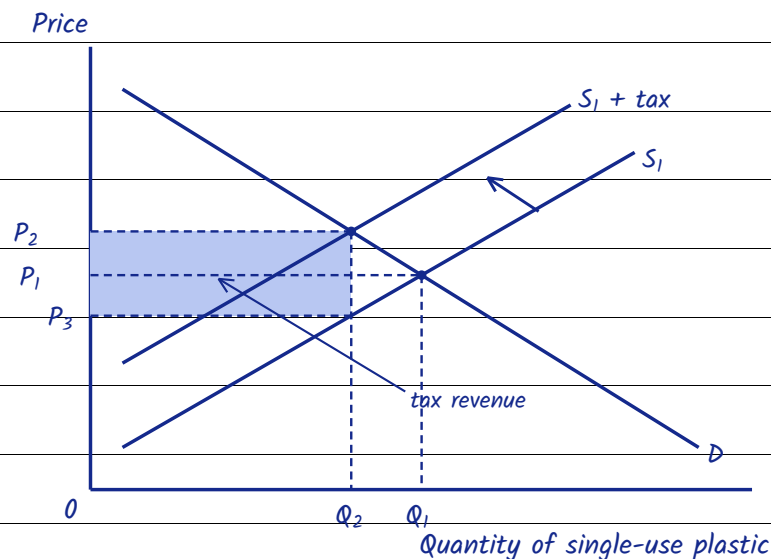
Plastic bag charges are a similar price-based policy. Extract C shows that when the charge was increased from £0.05 to £0.10 in 2021, the use of plastic bags fell from 627 million to 496 million. This is a fall of 20.89% following a price rise of 100%, giving a PED of -0.21 . This shows that the charge did reduce use, but that demand is



highly price inelastic, so much larger charges may be needed to make a big difference.

On the other hand, the charge changed habits, as people got used to bringing reusable bags, which may continue in the long run.

A second approach is regulation, such as outright bans on single-use bags, straws and cutlery, production restrictions or compulsory recycling targets. Bans are simple to understand and can eliminate the waste completely and quickly, which is useful when the external costs are very large and when demand is price inelastic so that taxes would have little effect. However, bans remove consumer choice and may impose high costs on firms, which may be passed on through higher prices. They need to be enforced, which has an opportunity cost, and they may cause people to switch to alternatives, such as paper or heavier plastic bags, which may have their own environmental costs. There is a risk of government failure if the government lacks the information to set the right regulations.



A third approach is to change incentives and behaviour in other ways. Deposit return schemes, where consumers pay a small deposit that is refunded when the bottle is returned, give a strong incentive to recycle and have achieved very high return rates in some countries. Governments could subsidise biodegradable or reusable alternatives, reducing their price so that consumers switch away from plastic, and fund recycling

Turn over ►



Extra space *facilities and new technology. Education campaigns and clear labelling would reduce imperfect information so that consumers take into account the damage they cause. However, subsidies and funding have an opportunity cost, as the money could be spent on health or education, or require higher taxes, and information campaigns may take a long time to change behaviour, especially where using plastic has become a habit.*

Single-use plastic waste is also an international problem, as plastic in the oceans is a common resource that no country owns, so there is a tragedy of the commons. One country acting alone has limited effect, and some richer countries export their waste to poorer ones, so bans on importing plastic waste and international agreements would be needed. Achieving international cooperation is difficult, because countries have different priorities. Extract A shows that waste per person ranges from 18kg in China to 59kg in Australia and 53kg in the USA, so high-income countries with high waste per person have more reason, and more resources, to act. Lower-income countries may give a higher priority to economic growth and the cheap packaging that keeps food safe and affordable.

Which policy is best therefore depends on several factors: the price elasticity of demand for the product, the availability of affordable substitutes, the size of the external costs, the cost of administering and enforcing the policy, and each country's level of income and priorities. It also depends on whether the risk of government failure is greater than the market failure being corrected.

In conclusion, no single policy is likely to be enough. Taxes and charges such as the £0.10 bag charge raise revenue and change habits, but because demand is inelastic they reduce waste only gradually. Bans are the most effective for items with close substitutes, such as bags and straws, while deposit schemes and subsidies for alternatives are better for items that are hard to replace. The most effective approach is a combination of these policies, with taxes used to fund recycling, supported by



education and international cooperation, so that the reduction in waste outweighs the costs of intervention.

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END OF QUESTIONS



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Question number	Additional page, if required. Write the question numbers in the left-hand margin.
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