Please check the examination details below before entering your candidate information

Candidate surname: StemUp Model Solution

Other names:

Pearson Edexcel
International Advanced Level

Centre Number

Candidate Number

Thursday 10 October 2019

Morning (Time: 1 hour 45 minutes)

Paper Reference **WEC11/01**

Economics

International Advanced Subsidiary
Unit 1: Markets in action

You must have:
Source Booklet (enclosed)

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.
- Answer **ALL** questions in Sections A, B and C.
- Answer **ONE** question in Section D.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*

Information

- The total mark for this paper is 80.
- 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.

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SECTION A

Answer ALL questions in this section.

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 ☒.

1 Which **one** of the following best describes the nature of economics?

- ☐ **A** Economics is a physical science
- ☒ **B** Economics is a social science
- ☐ **C** Economists investigate the allocation of unlimited resources to satisfy limited wants
- ☐ **D** Economists use scientific experiments keeping all variables unchanged

(Total for Question 1 = 1 mark)

2 Which **one** of the following roles is the state most likely to undertake in a mixed economy?

- ☒ **A** Providing subsidies to encourage the production of goods with external benefits
- ☐ **B** Providing subsidies to encourage the production of goods with external costs
- ☐ **C** Imposing a specific tax on the production of public goods
- ☐ **D** Imposing an ad valorem tax on the production of public goods

(Total for Question 2 = 1 mark)

3 Which **one** of the following is a function of money?

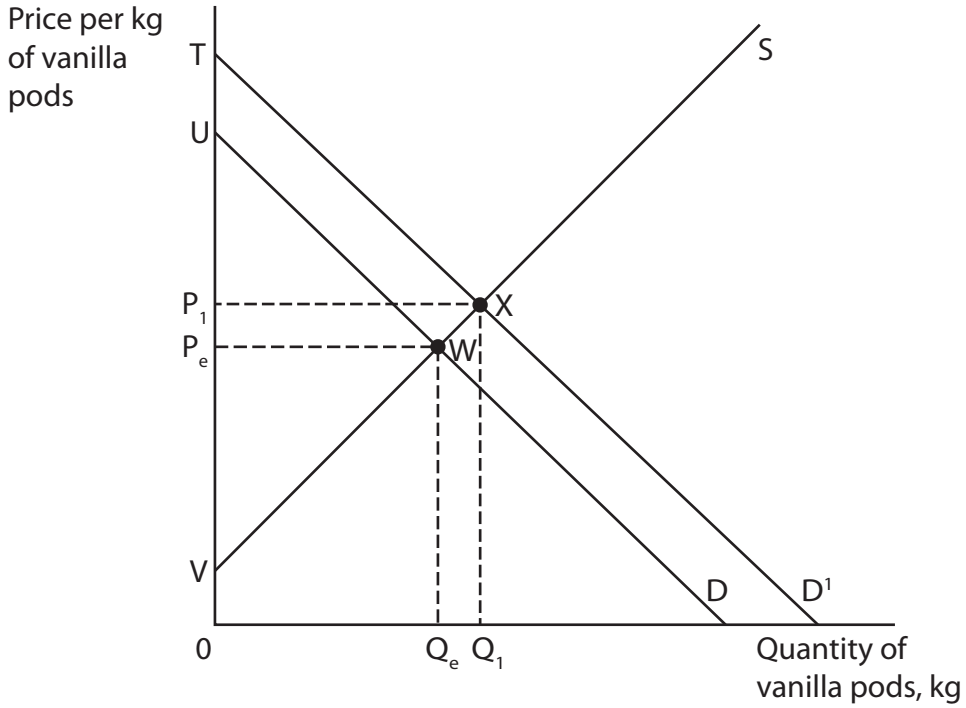
- ☐ **A** To reduce the risk of market bubbles arising
- ☐ **B** To ensure consumers feel valued
- ☐ **C** To enable consumers to minimise utility
- ☒ **D** To act as a method of deferred payment

(Total for Question 3 = 1 mark)

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4 The diagram shows the market for vanilla pods.



Madagascar is the world's largest supplier of vanilla pods. Higher demand for natural flavourings in rich countries has led to an increase in the demand for vanilla as shown in the diagram above.

This will result in an increase in

- ☒ **A** producer surplus to P_1TX
- ☒ **B** consumer surplus to P_eUW
- ☒ **C** producer surplus by P_eP_1XW
- ☒ **D** consumer surplus by P_eP_1XW

(Total for Question 4 = 1 mark)

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5 The table shows the estimated price elasticity of supply for cotton in selected countries.

Australia	0.46
Egypt	0.16
India	0.31
Mexico	1.08

(Source: http://www.fao.org/3/a-ah470e.pdf)

Which **one** of the following can be deduced from the table?

- ☒ **A** Supply is price elastic in India
- ☒ **B** Supply is price inelastic in Mexico
- ☒ **C** Supply is least responsive to a change in price in Egypt
- ☒ **D** Supply is most responsive to a change in price in Australia

(Total for Question 5 = 1 mark)

6 In 2017 the average price of a smartphone increased by 5% in Western Europe. This resulted in a 4% decrease in the sales of smartphones in this region.

Ceteris paribus, the price elasticity of demand for smartphones in this region is equal to

- ☒ **A** -1.25
- ☒ **B** -0.80
- ☒ **C** +0.80
- ☒ **D** +1.25

(Total for Question 6 = 1 mark)

TOTAL FOR SECTION A = 6 MARKS

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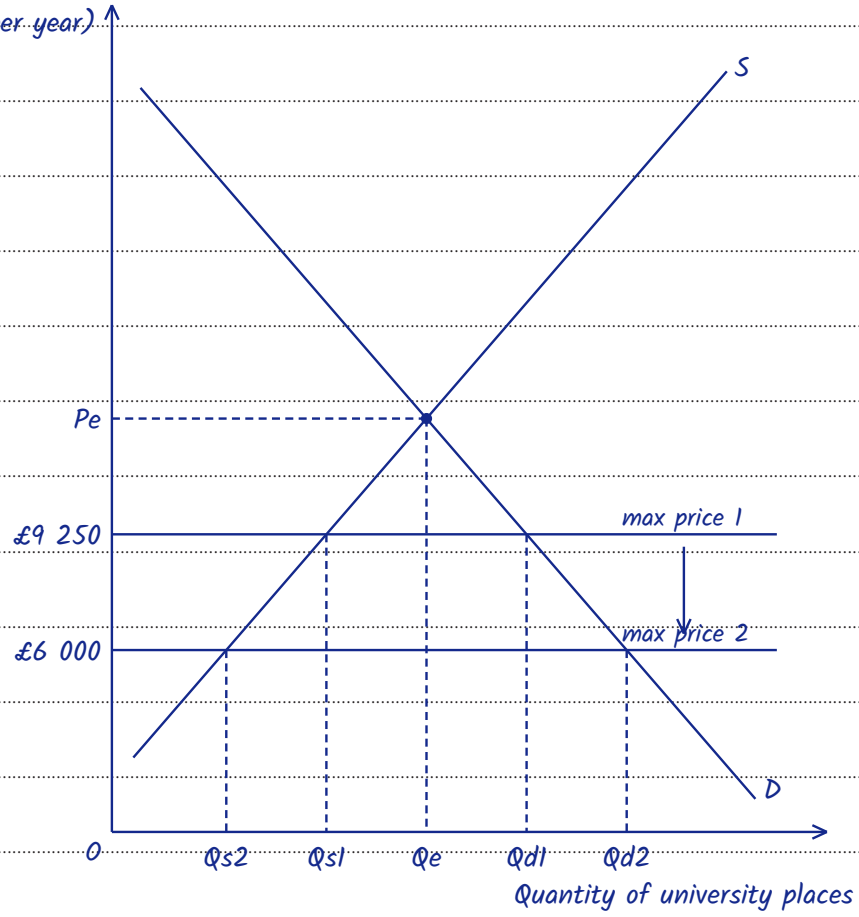
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SECTION B

Answer ALL questions in this section in the space provided.

7 In the UK the average student debt was £46 000 for graduates completing their courses in 2017. The UK Government considered reducing the maximum price of university tuition fees from £9 250 to £6 000 per year.

Draw a diagram to illustrate the impact of a decrease in the maximum price of university tuition fees in the UK.



The original maximum fee of £9 250 is set below the equilibrium fee Pe, so there is already a shortage of university places of Qd1 – Qs1. Cutting the maximum fee to £6 000 makes university cheaper, so quantity demanded extends from Qd1 to Qd2, but universities receive less per student, so quantity supplied contracts from Qs1 to Qs2. Excess demand (the shortage) increases from Qd1 – Qs1 to Qd2 – Qs2, so more students who want a place cannot get one.

(Total for Question 7 = 4 marks)

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8 Governments of European Union countries spend a total of €3 billion a year on street lighting.

With reference to the provision of street lights, explain what is meant by the term 'public good'.

A public good is a good that is both non-excludable and non-rival, so it would be under-provided or not provided at all by the free market.

Street lights are non-excludable: once a street light is switched on, it is impossible to stop anyone walking or driving along the street from benefiting from the light, even if they have not paid. They are also non-rival: one person benefiting from the light does not reduce the amount of light available to other people nearby.

Because people can free ride by benefiting without paying, private firms cannot charge for street lights and make a profit, so they will not provide them. This is why governments in the EU provide them, spending a total of €3 billion a year, funded through taxation.

(Total for Question 8 = 4 marks)

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9 In Canada, two of the largest internet providers, Bell and Rogers, increased prices in 2018. Consumers could save 25% by switching to smaller internet providers. However, most consumers remained with their more expensive internet providers.

Explain **one** reason why many consumers behave in this way and remain with their current internet providers.

Traditional economic theory assumes consumers are rational and maximise their utility, so they should switch to save 25%. However, many consumers show habitual behaviour and inertia: they have used Bell or Rogers for a long time and are in the habit of paying them, and they lack the time or desire to search for and go through the process of switching to a smaller provider.

As a result, they do not compare prices and stay with the more expensive provider, even though switching could save them 25%. So they fail to maximise their utility, which is irrational behaviour. This allows Bell and Rogers to raise prices without losing many customers.

(Total for Question 9 = 4 marks)

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10 The table shows the gross weekly earnings of Chinese workers and the number of visits abroad by Chinese citizens in 2016 and 2017.

	2016	2017
Gross weekly earnings (income)	¥1 299	¥1 373
Number of visits abroad by Chinese citizens	122 million	127 million

(Source: https://ieconomics.com/china-wages and https://www.travelchinaguide.com/tourism/2016statistics/outbound.htm)

Using the data in the table, calculate the income elasticity of demand for visits abroad by Chinese citizens. Show your workings.

Income elasticity of demand (YED) = % change in quantity demanded ÷ % change in income

% change in quantity demanded = (127m − 122m) ÷ 122m × 100

= 5 ÷ 122 × 100 = 4.10%

% change in income = (¥1 373 − ¥1 299) ÷ ¥1 299 × 100

= 74 ÷ 1 299 × 100 = 5.70%

YED = 4.10% ÷ 5.70% = +0.72 (2 d.p.)

YED is positive, so visits abroad are a normal good, and as it is between 0 and 1, demand is income inelastic.

(Total for Question 10 = 4 marks)

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11 The table shows the total utility gained by Luca as he increases the number of drinks he consumes in one day.

Number of drinks	Total utility	Marginal utility
1	15	–
2	32	32 – 15 = 17
3	52	52 – 32 = 20
4	73	73 – 52 = 21
5	85	85 – 73 = 12
6	90	90 – 85 = 5

Explain how the above table may be used to illustrate the concept of diminishing marginal utility. Use the last column in the table to show your workings.

Marginal utility is the change in total utility from consuming one extra unit of a good.

Diminishing marginal utility is where each additional unit consumed gives a smaller increase in total utility than the previous unit.

From 1 to 4 drinks, Luca experiences increasing marginal utility, as marginal utility rises from 17 to 20 to 21. Diminishing marginal utility starts when he moves from 4 to 5 drinks: marginal utility falls from 21 to 12, and then to 5 for the 6th drink. Total utility still rises (from 73 to 90), but by smaller amounts with each extra drink.

(Total for Question 11 = 4 marks)

TOTAL FOR SECTION B = 20 MARKS

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SECTION C

Study Extracts A, B and C and Figures 1 and 2 in the Source Booklet before answering Question 12.

Write your answers in the space provided on the following pages.

12 (a) Define the term 'information gap' (Extract B, line 3).

(2)

(b) Explain what is meant by 'positive economic statements'. Include **two** examples from the extracts to support your answer.

(4)

(c) Analyse **one** reason why 'the price of plastic waste material fell by more than 40%.' (Extract A, line 2).

Illustrate your answer with a supply and demand diagram.

(6)

(d) With reference to Extract B, examine the external costs associated with the consumption and disposal of plastic bags.

(8)

(e) With reference to Extract C, Figure 1 and Figure 2, discuss the microeconomic impact of the introduction of an indirect tax on plastic bags.

Illustrate your answer with an appropriate diagram.

(14)

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12 (a) Define the term 'information gap' (Extract B, line 3).

(2)

An information gap is where consumers or producers do not have full or accurate information, for example about the harmful effects of disposing of plastic bags, so they cannot correctly weigh up the costs and benefits of consumption and make a rational choice. It is a cause of market failure.

(b) Explain what is meant by 'positive economic statements'. Include **two** examples from the extracts to support your answer.

(4)

Positive economic statements are objective statements of fact that can be tested, supported or refuted by using evidence. They are value free and do not contain value judgements, unlike normative statements, which are opinions about what ought to happen.

Example 1: "During 2017 the price of plastic waste material fell by more than 40%, from £373 per tonne in February to £215 per tonne in December" (Extract A). This can be checked against price data.

Example 2: "Plastic bags cause over 100 000 marine animal deaths every year" (Extract B). This can be tested by collecting evidence on marine animal deaths.

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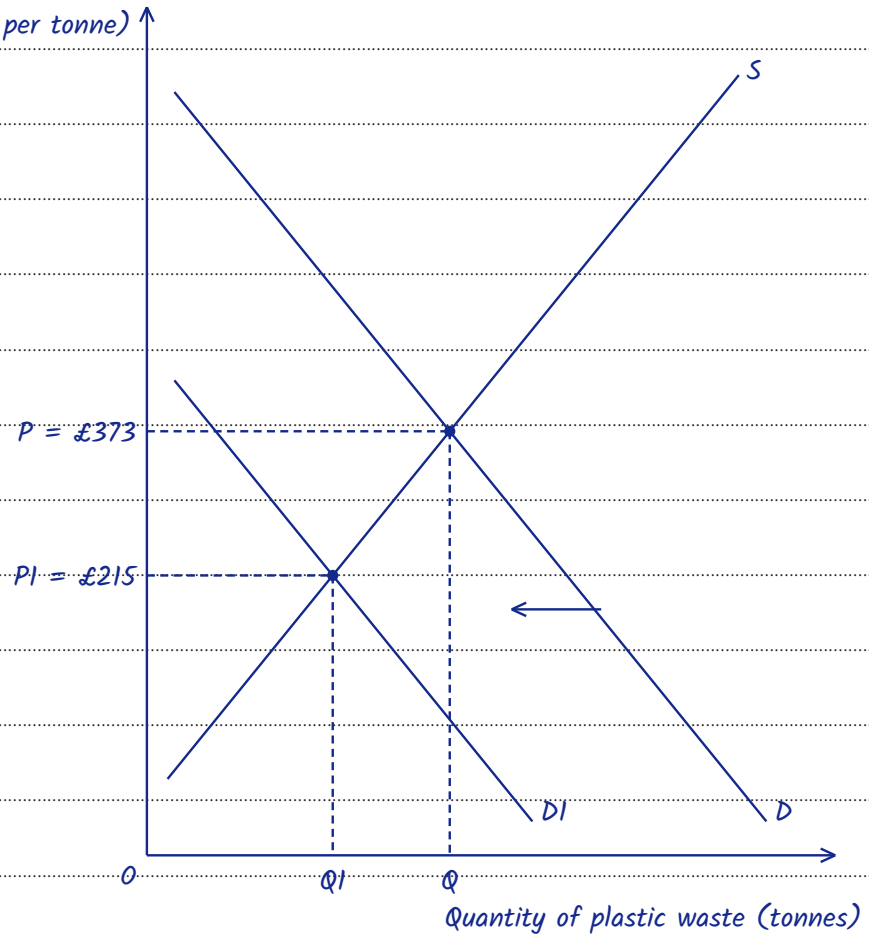
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(c) Analyse **one** reason why 'the price of plastic waste material fell by more than 40%.' (Extract A, line 2).

Illustrate your answer with a supply and demand diagram.

(6)

One reason is a fall in demand for plastic waste caused by China imposing a ban on the import of plastic waste. China was a very large market for this material, so the ban removed many of the buyers: there are now "dramatically fewer buyers for the plastic waste".



The ban causes the demand curve for plastic waste to shift to the left from D to D1. At the original price of £373 per tonne there is now excess supply, as sellers of waste cannot find enough buyers. To sell their waste, sellers have to accept a lower price, so the price is bid down. As the price falls, there is a contraction in supply along S, because collecting and selling waste becomes less profitable, until a new equilibrium is reached.

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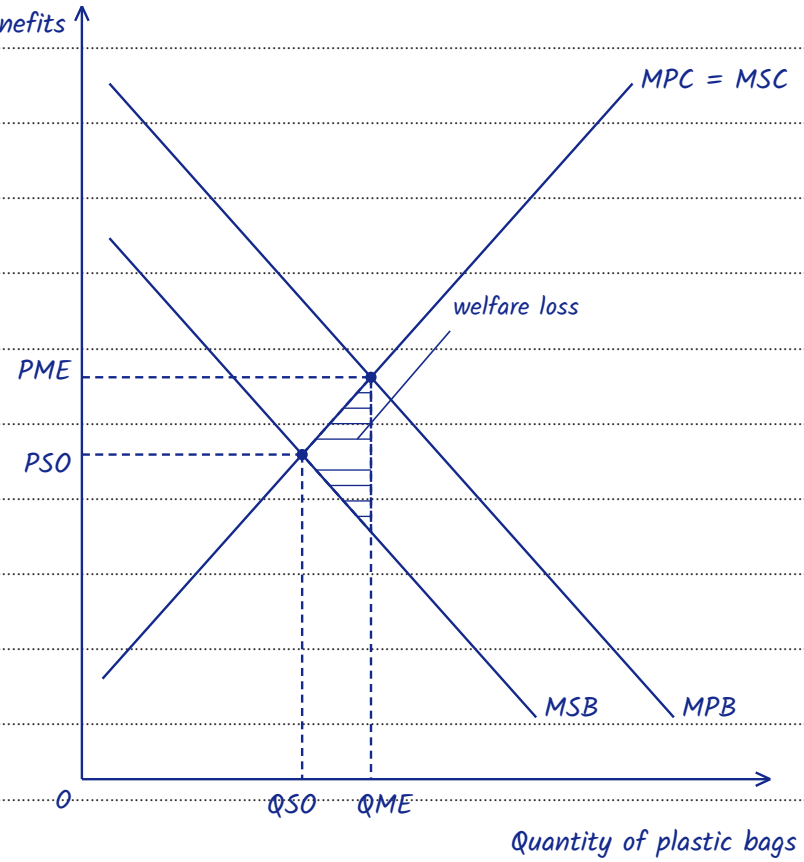
The equilibrium price falls from £373 to £215 per tonne (a fall of (373 – 215) ÷ 373 × 100 = 42.4%) and the equilibrium quantity traded falls from Q to Q1.

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(d) With reference to Extract B, examine the external costs associated with the consumption and disposal of plastic bags.

(8)

External costs are the negative spillover effects of consumption or production on third parties who are not involved in the transaction. They are not included in the market price, so the marginal social benefit (MSB) of plastic bags is below the marginal private benefit (MPB).



Consumers only consider their private benefits, so they consume at QME where MPB = MPC rather than the social optimum QSO where MSB = MSC. Plastic bags are over-consumed, creating the shaded welfare loss. This is made worse by the information gap, as many people are not aware of the harmful effects of disposal.

One external cost is on farmers. As bags break down, plastic particles contaminate soil and waterways, so crop yields may fall or crops may be contaminated. Farmers who did not use the bags suffer lower revenues and profits.

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A second external cost is on marine life and the fishing industry. Plastic bags cause over 100 000 marine animal deaths every year and nearly 90% of ocean debris is plastic, so animals mistake it for food or become trapped. This reduces fish stocks available to the fishing industry and damages ecosystems.

A third external cost is on human health. Some food humans eat may be contaminated with toxins from plastic, so people may become ill, raising healthcare costs that fall on taxpayers where healthcare is provided by the state.

However, the size of these external costs is difficult to measure and put a monetary value on, and many effects, such as toxins entering food, take a long time to emerge, as bags take 400 to 1 000 years to break down. Also, not all of the 90% of plastic debris comes from plastic bags, so the external cost of bags alone may be overstated, and Extract B comes from a conservation website that may present biased evidence. Plastic bags also give private benefits, such as convenient and hygienic transport of goods. Even so, with 100 000 animal deaths a year and long-lasting damage, the external costs are likely to be significant.

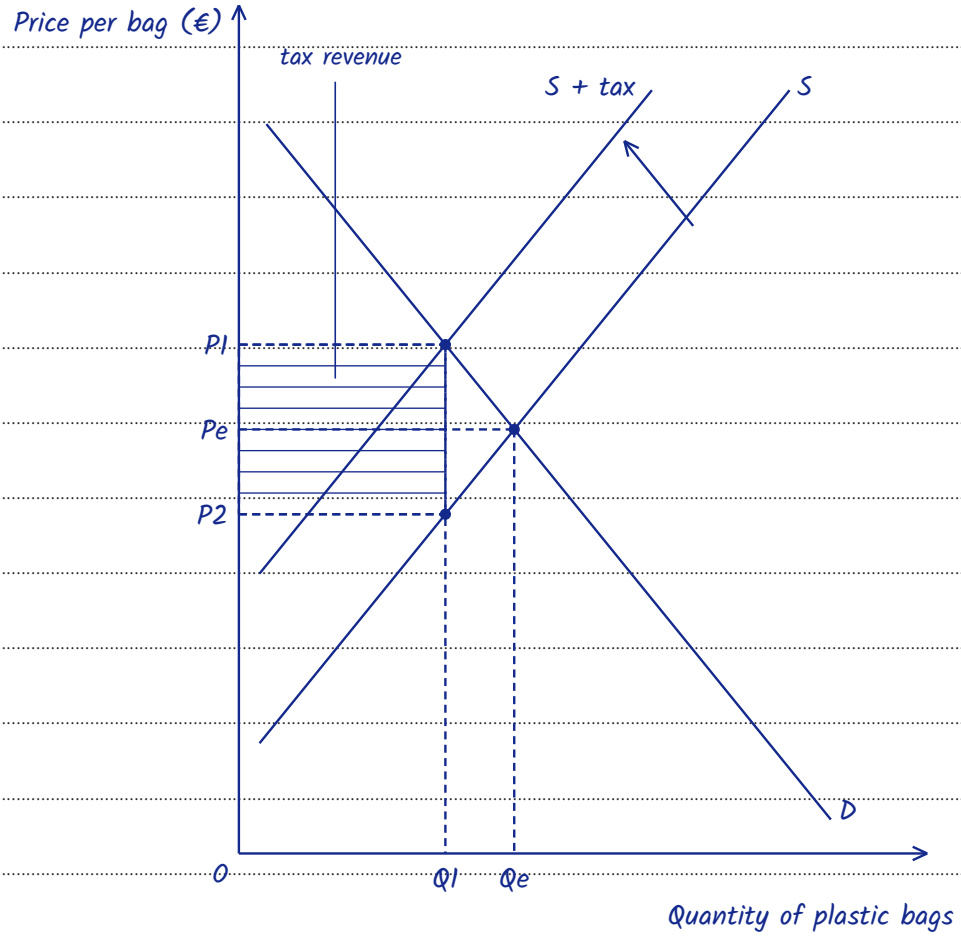
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(e) With reference to Extract C, Figure 1 and Figure 2, discuss the microeconomic impact of the introduction of an indirect tax on plastic bags.

Illustrate your answer with an appropriate diagram.

(14)

An indirect tax is a tax on expenditure on goods and services. The plastic bag taxes are specific taxes, a fixed amount per unit: €0.27 per bag in Denmark and €0.04 per bag in Greece. The tax increases retailers' costs of supplying each bag, so supply shifts vertically upwards by the amount of the tax, from S to S + tax.



The price paid by consumers rises from Pe to P1 and the quantity of plastic bags falls from Qe to Q1. The evidence supports this: in Denmark bag use halved from 800 million to 400 million bags in the year after the tax, and in Greece use fell by 75% in January 2018 compared with January 2017. Consumer surplus falls by the area between Pe and P1 to the left of the demand curve, as consumers pay more and buy fewer bags.

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The tax is split between consumers and producers. Consumers pay P1 – Pe of each tax and producers pay Pe – P2, as they now receive only P2 per bag, so producer surplus falls. Plastic bag manufacturers and retailers lose revenue and profit, and employment in plastic bag production may fall.

The government gains tax revenue equal to the shaded area (P1 – P2) × Q1. Figure 1 shows Denmark raised €21.6 million in 1995, rising to €26.8 million in 2010, which can be spent on public services or cleaning up plastic waste.

The tax also internalises the external costs of plastic bags. Lower consumption reduces plastic in soil, waterways and oceans, moving the market closer to the social optimum. Greece's consumers are expected to use 110 bags per person a year, much closer to the EU target of 90, down from about 240 single use bags per person in 2010 (Figure 2). Consumers switch to substitutes: sales of reusable shopping bags in Greece rose by 5 000%, so producers of reusable bags gain revenue, profit and producer surplus.

However, the impact depends on the price elasticity of demand. In Denmark supermarkets passed the tax on to consumers, suggesting their demand is relatively inelastic, while clothing shops paid the tax themselves, suggesting demand there is more elastic. With inelastic demand, consumption falls by less and the external costs remain, while more of the burden falls on consumers.

The magnitude of the tax also matters. Greece's tax of only €0.04 per bag is very small compared with Denmark's €0.27, yet use still fell by 75%, which suggests the effect may come more from raising awareness than from the price change itself. This effect may weaken over

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time as consumers get used to the charge.

The revenue raised is also small: Denmark's tax raised just 0.03% of total tax revenue in 1995 and 0.02% by 2014, and revenue fell from €26.8 million in 2010 to €24.5 million in 2015 as bag use fell. Ironically, the more successful the tax is at reducing use, the less revenue it raises. At €0.04, Greece's revenue is likely to be even smaller, and some of it will be used up in administering the tax.

There is also a risk of government failure: it is difficult to measure the external costs, so the tax may be set too high or too low, and reusable bags may cause their own environmental damage if they are thrown away. Figure 2 also shows that 2010 use varied hugely, from over 500 bags per person in Slovakia to under 100 in Denmark, so the same tax would have different impacts in different countries.

In conclusion, the tax has a significant microeconomic impact in reducing plastic bag use and the external costs it creates, as the 50% fall in Denmark and 75% fall in Greece show. The impact on tax revenue and on producers is small, and the overall effect depends on the price elasticity of demand and the size of the tax, so it is likely to be greatest when combined with information campaigns that close the information gap.

(Total for Question 12 = 34 marks)

TOTAL FOR SECTION C = 34 MARKS

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SECTION D BEGINS ON THE NEXT PAGE.

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SECTION D

Answer ONE question from this section.

Write your answer in the space provided.

EITHER

13 The Government of Finland plans to offer a subsidy of €400 for each purchase of an electric bicycle. The aim is to encourage cycling to reduce the use of motor cars.

Evaluate the economic effects of subsidising electric bicycles.

(Total for Question 13 = 20 marks)

OR

14 In 2007, 97% of Ukrainian children received the measles vaccination but in 2016 this had fallen to 42%. In 2016 there were 102 cases of measles but in the first 10 months of 2017 the number increased to 2 381.

Evaluate the private benefits and external benefits of children receiving the measles vaccination.

(Total for Question 14 = 20 marks)

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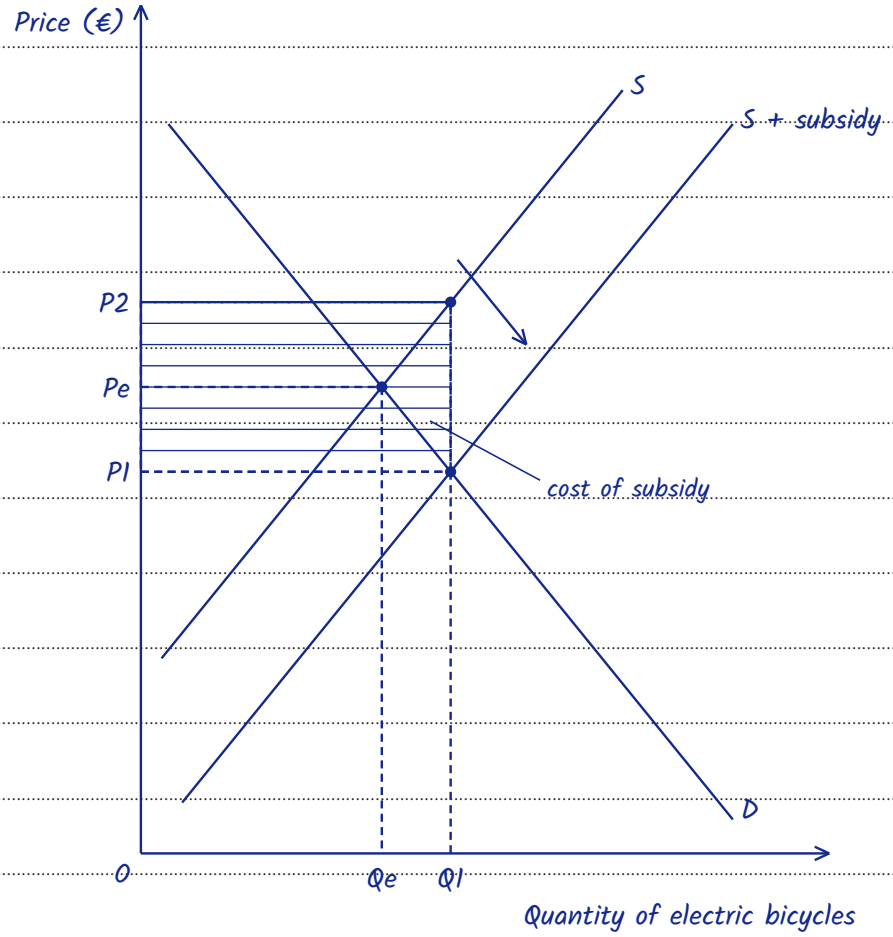
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Indicate which question you are answering by marking a cross in the box ☒. If you change your mind, put a line through the box ☒ and then indicate your new question with a cross ☒.

Chosen question number: **Question 13** ☒ **Question 14** ☐

Write your answer here:

A subsidy is a payment from the government to producers (or consumers) to reduce costs and encourage the production and consumption of a good. Finland's €400 subsidy per electric bicycle lowers the effective cost of supplying each bike, so supply shifts vertically downwards by €400, from S to S + subsidy.



The first effect is on consumers. The price of electric bicycles falls from Pe to P1 and the quantity bought increases from Qe to Q1. Consumer surplus increases, as existing buyers pay less and new buyers enter the market. Producers receive P2 per bike, made up of the price P1 plus the €400 subsidy, so the producer surplus, revenue and profit of electric bicycle manufacturers

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and retailers rise, and employment in the industry may increase.

The second effect is on the market for motor cars. Electric bicycles are a substitute for cars for short journeys, so a lower price causes demand for car travel to fall. This reduces car use, congestion and fuel consumption, so car producers and fuel retailers may lose revenue.

The third effect is on external costs and benefits. Cars create external costs such as carbon emissions, air pollution and congestion that affect third parties. Electric bicycles create external benefits: cycling improves health, reducing pressure on the health service. The free market under-consumes electric bicycles, as consumers ignore these external benefits, so the subsidy moves consumption closer to the social optimum and reduces the welfare loss.

The fourth effect is on the government budget. Government spending on the subsidy equals the shaded area, €400 × Q1. This has an opportunity cost, as the money could be spent on health, education or cycle lanes, or it may require higher taxes or borrowing.

However, the effects depend on the size of the subsidy relative to the price. If an electric bicycle costs around €2 000, €400 is a 20% reduction, which is significant, but the change in quantity depends on the price elasticity of demand. If demand is price inelastic, quantity will rise only a little and the subsidy will mostly benefit people who would have bought an electric bicycle anyway, which wastes public money. The incidence also depends on elasticity: if supply is inelastic, producers may keep much of the €400 as higher profit rather than passing it on in lower prices.

It is also uncertain whether the aim of reducing car use will be met. Some buyers may switch from ordinary bicycles, walking or public transport rather than from cars, which gives little

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environmental gain. Finland's long, cold and snowy winters may limit cycling for much of the year, so many people will still need their cars. Changing travel habits takes time, so the effects are likely to be greater in the long run.

There is a risk of government failure. It is difficult to measure the value of the external benefits, so the subsidy may be set too high, leading to over-provision and a misallocation of resources. Manufacturers may become dependent on the subsidy and have less incentive to become efficient and cut costs, and there are administration costs.

Alternative policies may be more effective, for example taxing fuel or car use, which makes the polluter pay, providing information on the health benefits of cycling, or investing in safe cycle lanes, which tackles a key reason people do not cycle.

In conclusion, the subsidy is likely to increase the use of electric bicycles and benefit consumers and producers. However, the overall effect on car use and emissions depends on the price elasticity of demand, whether people really switch from cars, and the time period. Its success is likely to be greatest in the long run and if combined with investment in cycling infrastructure, so the benefits are likely to justify the opportunity cost.

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TOTAL FOR SECTION D = 20 MARKS
TOTAL FOR PAPER = 80 MARKS

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Thursday 10 October 2019

Morning | Paper Reference **WEC11/01**

Economics

International Advanced Subsidiary
Unit 1: Markets in action

Source Booklet

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Sources for use with Section C.

The market for plastics

Extract A Plastic waste prices fall

During 2017 the price of plastic waste material fell by more than 40%. This was mainly caused by China imposing a ban on the import of plastic waste. The loss of such a large market caused a decrease in the average price from £373 per tonne in February to £215 per tonne in December. This is the price paid by the businesses who recycle the waste material.

Craig Curtis, Managing Director of CS Recycling, commented that there were now dramatically fewer buyers for the plastic waste.

Extract B Plastic bags damaging the environment

Plastic bags have a significant impact on the environment. However, there appears to be an information gap since many people are not aware of the harmful effects caused by the disposal of plastic bags. These include:

- Plastic bags break down into smaller and smaller toxic pieces
- A plastic bag takes between 400 to 1 000 years to break down
- As it breaks down, plastic particles contaminate soil and waterways
- Plastic bags cause over 100 000 marine animal deaths every year
- Nearly 90% of the debris in our oceans is plastic
- Some of the food humans eat may be contaminated with toxins from plastic.

Extract C Reducing plastic bag use in the European Union (EU)

The yearly consumption of plastic carrier bags in the EU is nearly 100 billion. 92% of these are single use carrier bags. Around 3% of the marine litter in Europe is shopping bags.

In 1994 Denmark introduced a plastic bag tax of €0.27 per bag which supermarkets have passed onto consumers. However, clothing shops do not charge consumers for the bags and pay the tax themselves. In the year before the tax was introduced 800 million bags were used and in the year after the tax this dropped to 400 millions bags. The Danish Government found the tax on plastic bags raised just 0.03% of total tax revenue in 1995 and by 2014 this had fallen to 0.02%.

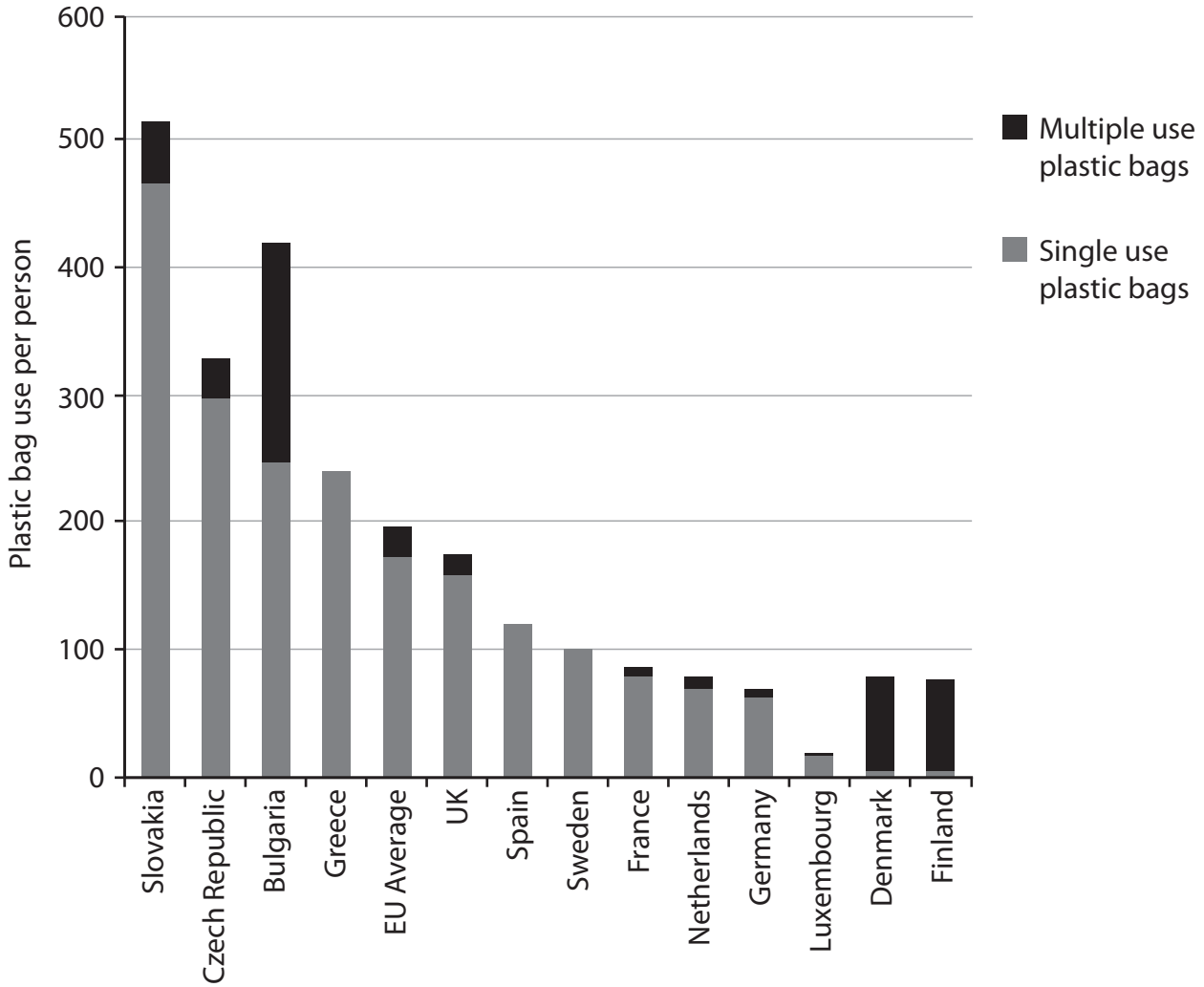
In January 2018 Greece introduced a plastic bag tax of €0.04 per bag. This resulted in a 75% decrease in the use of plastic bags compared with January 2017. Sales of reusable shopping bags increased by 5 000%. It is estimated that the average consumer will now only use 110 plastic bags per year. The EU target is 90 bags per person per year.

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Figure 1 Revenues from the tax on plastic bags for Denmark

Year	Tax revenue
1995	€21 564 000
2000	€23 779 000
2005	€25 723 000
2010	€26 818 000
2015	€24 547 000

Figure 2 Plastic bag use per person in selected countries, 2010



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Acknowledgements

Extract A adapted from 'Plastic film prices drop 40%', 19 December 2017, Carrie Bone, https://www.mrw.co.uk/latest/plastic-film-prices-drop-by-40/10026317.article

Extract B adapted from https://conservingnow.com/plastic-bag-environmental-impact/

Extract C, Figure 1 and Figure 2 adapted from Fact Sheet: Tax on Plastic Bags, https://green-budget.eu/wp-content/uploads/Tax-on-plastic-bags_FINAL.pdf

Extract C adapted from Greek Shoppers Responding to Plastic Bag Tax, 6 February 2018, John Smith, https://greece.greekreporter.com/2018/02/06/greek-shoppers-responding-to-plastic-bag-tax/