Please check the examination details below before entering your candidate information

Candidate surname	Other names
StemUp Model Solution	

Centre Number | Candidate Number

Pearson Edexcel International Advanced Level

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.

Turn over ▶

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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 statements is a consequence of diminishing marginal utility?

- ☒ **A** Total utility will rise at a faster rate as more of a product is consumed
- ☒ **B** The supply curve for a product will slope upwards
- ☒ **C** The demand curve for a product will slope downwards
- ☒ **D** Total utility will rise at a constant rate as more of a product is consumed

(Total for Question 1 = 1 mark)

2 The table shows the changes in electricity generation from two sources in selected countries between 2019 and 2020.

	Coal	Solar
Italy	–31%	+12%
India	–20%	+6%
South Korea	–11%	+26%
USA	–40%	+45%

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

- ☒ **A** The largest percentage decline in the use of the non-renewable resource for electricity generation was in South Korea
- ☒ **B** The largest percentage increase in the use of the renewable resource for electricity generation was in the USA
- ☒ **C** In all countries the use of the non-renewable resource for electricity generation increased
- ☒ **D** In all countries the use of the renewable resource for electricity generation decreased

(Total for Question 2 = 1 mark)

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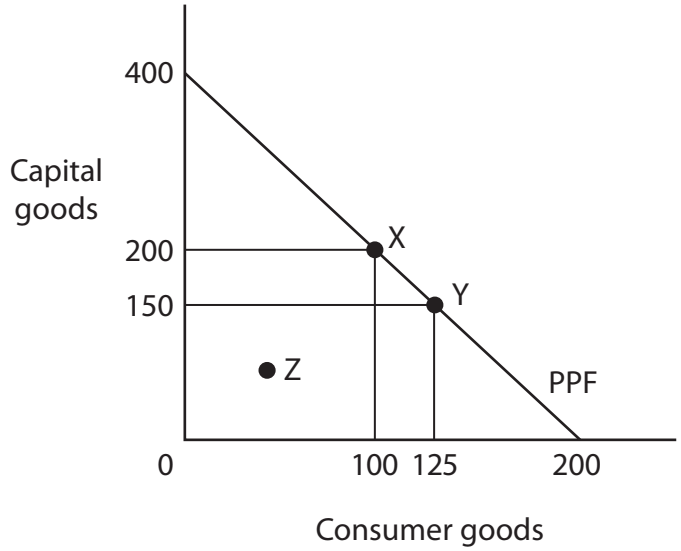
3 In the Netherlands the cross-elasticity of demand for organic meat with respect to a change in the price of non-organic meat is +0.5.

Which **one** of the following can be deduced from this information?

- ☒ **A** Organic meat and non-organic meat are substitutes
- ☐ **B** Organic meat and non-organic meat are normal goods
- ☐ **C** Organic meat and non-organic meat are unrelated goods
- ☐ **D** Organic meat and non-organic meat are complements

(Total for Question 3 = 1 mark)

4 The diagram shows the production possibility frontier for an economy currently operating at point X.



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

- ☐ **A** Point Z is unobtainable when using all available resources
- ☐ **B** Point Y would generate higher economic growth than point X
- ☒ **C** The movement from point X to point Y has an opportunity cost of 50 capital goods
- ☐ **D** The movement from point X to point Y has an opportunity cost of 25 consumer goods

(Total for Question 4 = 1 mark)

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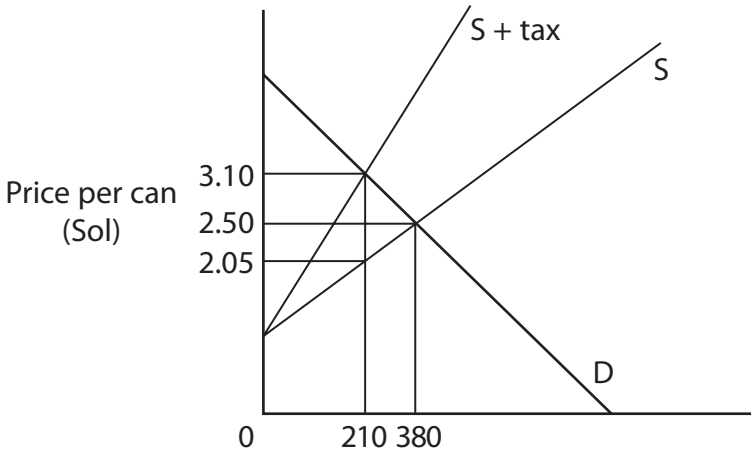
5 In the UK, consumers who remain loyal to their broadband provider pay, on average, an extra £113 per year.

Which **one** of the following is an example of inertia in the broadband market?

- ☒ **A** Consumers remain with their current provider because they cannot calculate the possible savings
- ☒ **B** Consumers remain with their current provider because they do not feel valued
- ☒ **C** Consumers remain with their current provider because they are influenced by the behaviour of their friends and family
- ☒ **D** Consumers remain with their current provider because they believe that the effort required to switch will be too great

(Total for Question 5 = 1 mark)

6 The diagram shows the market for a sugar-sweetened drink in Peru. In 2018 Peru's Government imposed an ad valorem tax on sugar-sweetened drinks.



.

Which **one** of the following shows the value of the consumer incidence of the tax?

- ☒ **A** Sol 94 500
- ☒ **B** Sol 126 000
- ☒ **C** Sol 220 500
- ☒ **D** Sol 228 000

(Total for Question 6 = 1 mark)

TOTAL FOR SECTION A = 6 MARKS

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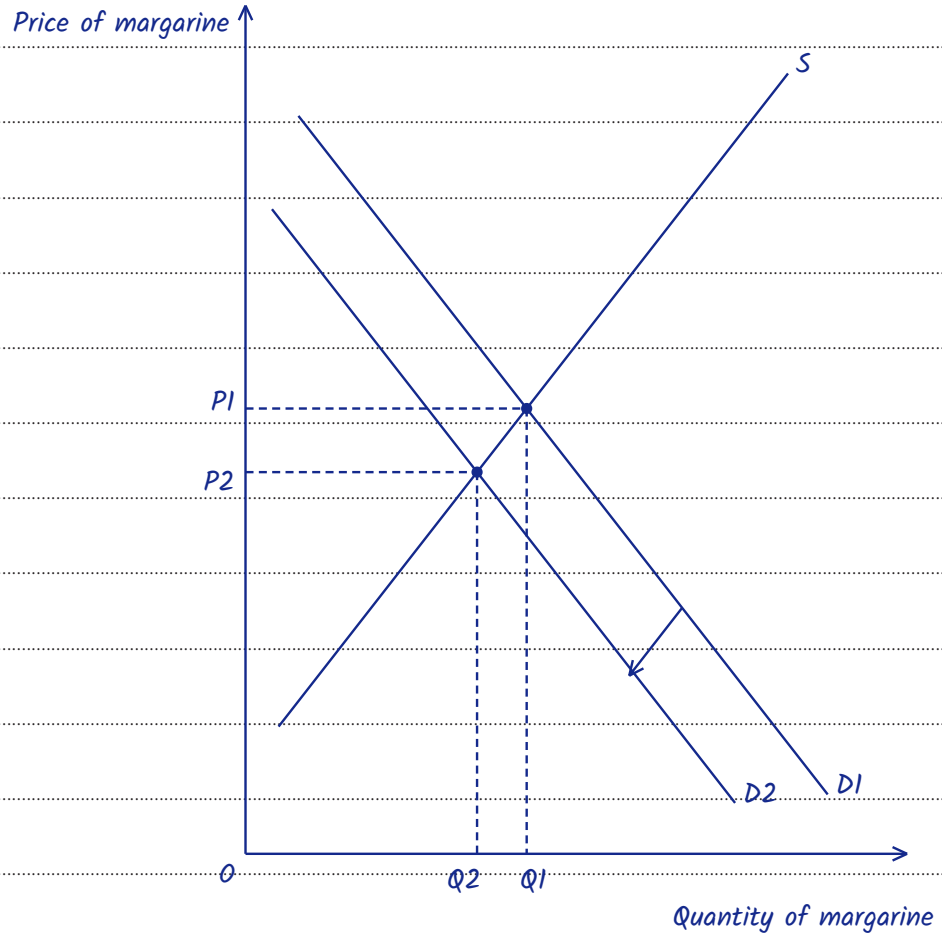
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SECTION B

Answer ALL questions in this section in the space provided.

7 In the USA the income elasticity of demand for margarine is –0.2. In April 2021 real incomes increased by 15%.

Draw a diagram to illustrate the likely impact of this increase in real incomes on the equilibrium price and quantity of margarine.



YED is –0.2, so margarine is an inferior good. A 15% rise in real incomes reduces demand by about 0.2 × 15 = 3%, so demand shifts left from D1 to D2. Price falls from P1 to P2 and quantity falls from Q1 to Q2.

(Total for Question 7 = 4 marks)

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8 In 1960 Lake Chad in Central Africa was large enough to provide the local farmers with water to irrigate their crops. However, by 2017 there had been a 90% reduction in the size of the lake. The farmers could no longer use water from the lake for irrigation.

With reference to Lake Chad, explain the difference between a free good and an economic good.

A free good is a good that is so abundant that it is not scarce, so it has no opportunity cost and no price: using more of it does not mean giving anything else up. An economic good is a scarce good that gives utility, so using it has an opportunity cost and people may be willing to pay for it.

In 1960 Lake Chad was large enough to provide all the local farmers with the water they wanted to irrigate their crops, so the water was effectively a free good: one farmer using more did not leave less for others.

By 2017 the lake had shrunk by 90% and farmers could no longer use it for irrigation. Water is now scarce, so it has become an economic good with an opportunity cost: farmers must give up other uses of resources (eg paying for wells or piped water) to irrigate their crops.

(Total for Question 8 = 4 marks)

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9 Prior to 1920 each worker at Henry Ford's car company would manufacture an entire car from start to finish. In the 1920s the company started to use an assembly line where each worker only completed a particular task.

Explain **one** advantage to a car manufacturer of using the division of labour to organise production.

The division of labour is where the production process is broken down into separate tasks and each worker specialises in one task, as on Ford's assembly line, where one worker might only fit the wheels or install the engine rather than building a whole car.

One advantage is higher labour productivity. Because each worker repeats the same task, they become very skilled and fast at it, and no time is wasted moving between jobs or changing tools. So each worker produces more output per hour.

As workers produce more cars while being paid the same wage, the average (unit) cost of each car falls. This means the car manufacturer can lower its prices to gain market share from competitors, or keep prices the same and earn higher profit margins.

(Total for Question 9 = 4 marks)

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10 In February 2021, British Gas increased the price of gas by 22%. As a result, the number of British Gas customers decreased by 350 000 to 17 000 000.

Ceteris paribus, calculate the price elasticity of demand for gas from British Gas. Show your workings.

PED = % change in quantity demanded ÷ % change in price

Original number of customers = 17 000 000 + 350 000 = 17 350 000

% change in quantity demanded = −350 000 ÷ 17 350 000 × 100

= −2.017%

PED = −2.017 ÷ 22 = −0.09 (2 d.p.)

The PED is between 0 and −1, so demand for gas from British Gas is price inelastic: a 22% rise in price led to only a 2.02% fall in the number of customers, as gas is a necessity and switching suppliers takes effort.

(Total for Question 10 = 4 marks)

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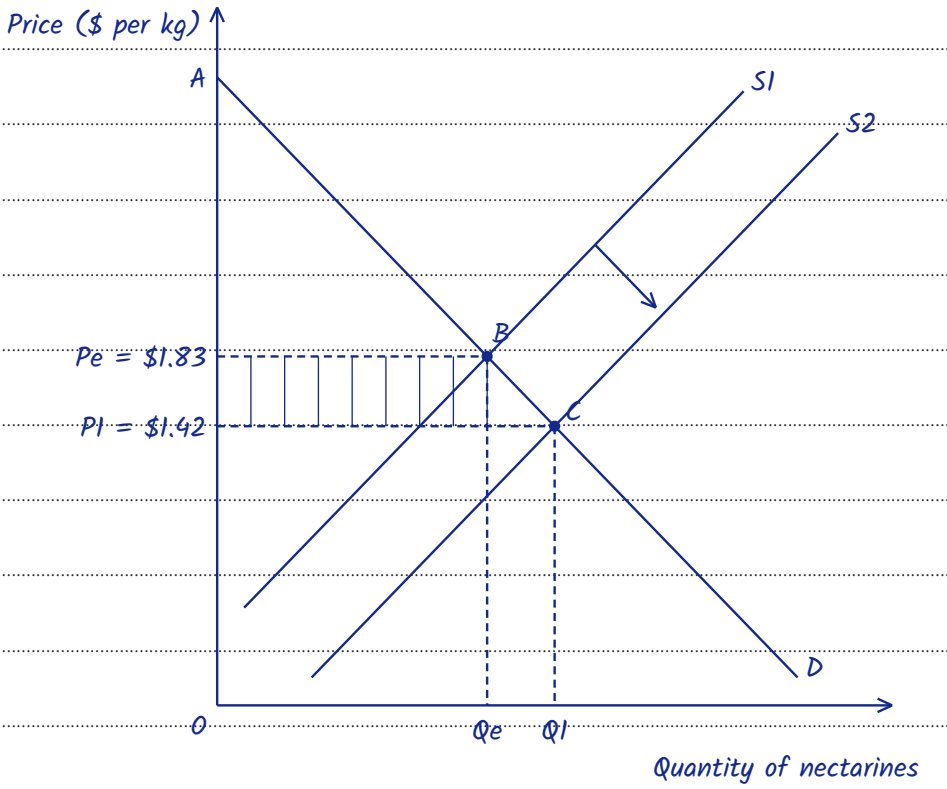
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11 Between August 2020 and August 2021 the world price of nectarines decreased from $1.83 to $1.42 per kg. This was caused by a good harvest in Spain, the world's largest producer.

Explain the likely impact of this change in price on consumer surplus in the market for nectarines.

Illustrate your answer with an appropriate diagram.

Consumer surplus is the difference between the price consumers are willing to pay for a good and the price they actually pay, shown by the area below the demand curve and above the price.



The good harvest in Spain shifts supply right from S1 to S2, so price falls by $0.41 from $1.83 to $1.42 per kg and quantity rises from Qe to Q1. Consumer surplus increases from ABPe to ACP1, a gain of the shaded area PeBCP1, as consumers pay less for nectarines and buy more.

(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 Figure 1 in the Source Booklet before answering Question 12.

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

12 (a) Define the term 'external costs' (Extract C, line 11).

(2)

(b) With reference to the second paragraph of Extract A, explain the phrase 'the supply of semiconductors is inelastic.'

(4)

(c) With reference to Extract A, analyse **two** reasons why semiconductor prices 'increased on average by 20%'.

Illustrate your answer with a supply and demand diagram.

(6)

(d) With reference to Extract B and Figure 1, examine **two** likely effects of excess demand for semiconductors on car manufacturers.

(8)

(e) With reference to Extract C and your own knowledge, discuss the possible microeconomic effects of the subsidies paid to semiconductor manufacturers in the USA.

Illustrate your answer with an appropriate diagram.

(14)

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12 (a) Define the term 'external costs' (Extract C, line 11).

(2)

External costs are the negative spillover effects of production or consumption on third parties who are not involved in the transaction and are not compensated, so marginal social cost is greater than marginal private cost, eg contaminated waste water from making semiconductors.

(b) With reference to the second paragraph of Extract A, explain the phrase 'the supply of semiconductors is inelastic.'

(4)

Price inelastic supply means that a change in price leads to a less than proportionate change in quantity supplied, so the percentage change in quantity supplied is smaller than the percentage change in price and PES is between 0 and 1.

Extract A shows this for semiconductors. Manufacturers were already operating at 100% capacity, so when demand and price rose they struggled to respond with more output. They tried to increase production but it was not possible to make additional capacity available for a considerable time, because building new factories takes years.

So supply cannot respond quickly to a change in price, and the supply curve is steep: a rise in demand mainly raises price rather than quantity.

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(c) With reference to Extract A, analyse **two** reasons why semiconductor prices 'increased on average by 20%'.

Illustrate your answer with a supply and demand diagram.

(6)

Extract A says the price of semiconductors increased on average by 20% in Quarter 1 2021, shown on the diagram (next page) as a rise from P1 to P2.

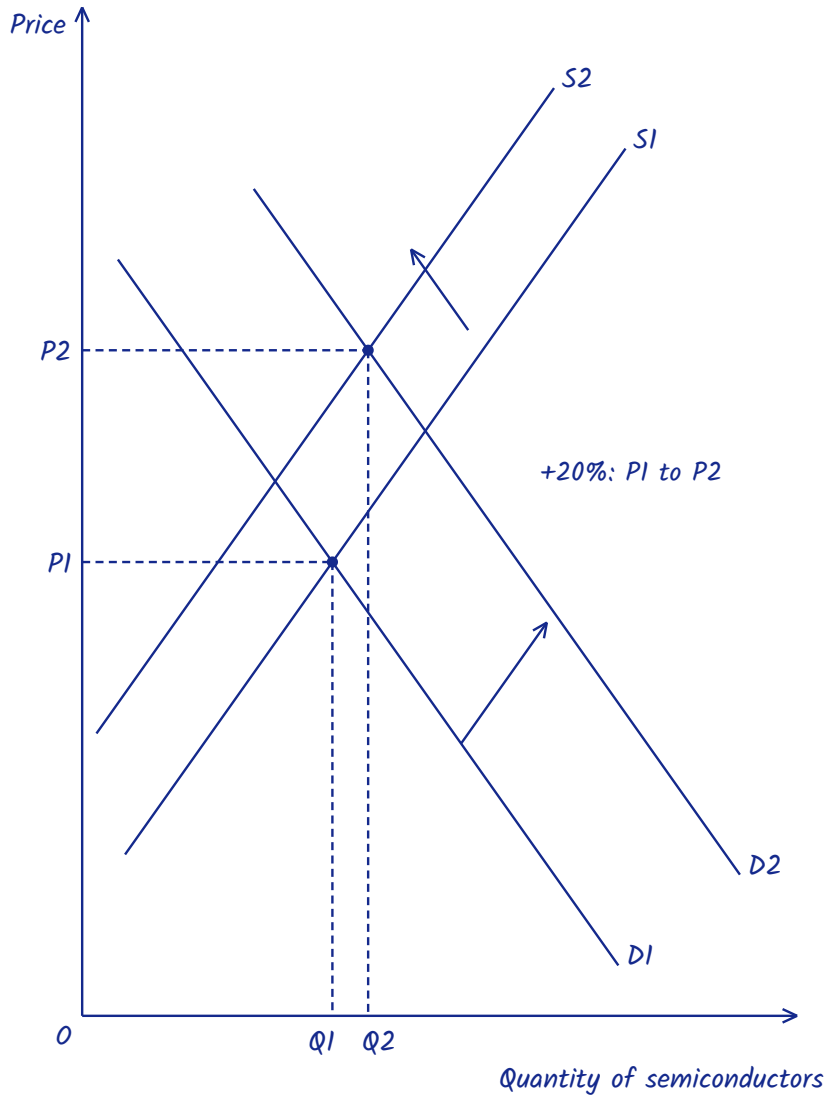
The first reason is higher costs of production. Steel and copper are raw materials used to make semiconductors, and their costs rose. This raises the cost of producing each semiconductor, so at every price manufacturers are willing and able to supply less, and supply shifts to the left from S1 to S2.

The second reason is higher demand. The global health crisis meant people worked and studied at home, so there was a significant increase in demand for laptops, tablets and smartphones. Semiconductors are essential components of these devices, so the derived demand for semiconductors rose and demand shifted to the right from D1 to D2.

At the original price P1 there is now excess demand, so the price is bid up until the market clears at the new equilibrium P2 and Q2. Both shifts push the price up, so price rises by a large amount. Supply is also inelastic, as firms were at 100% capacity, so the increase in demand mainly raised the price rather than the quantity, which only rose slightly from Q1 to Q2.

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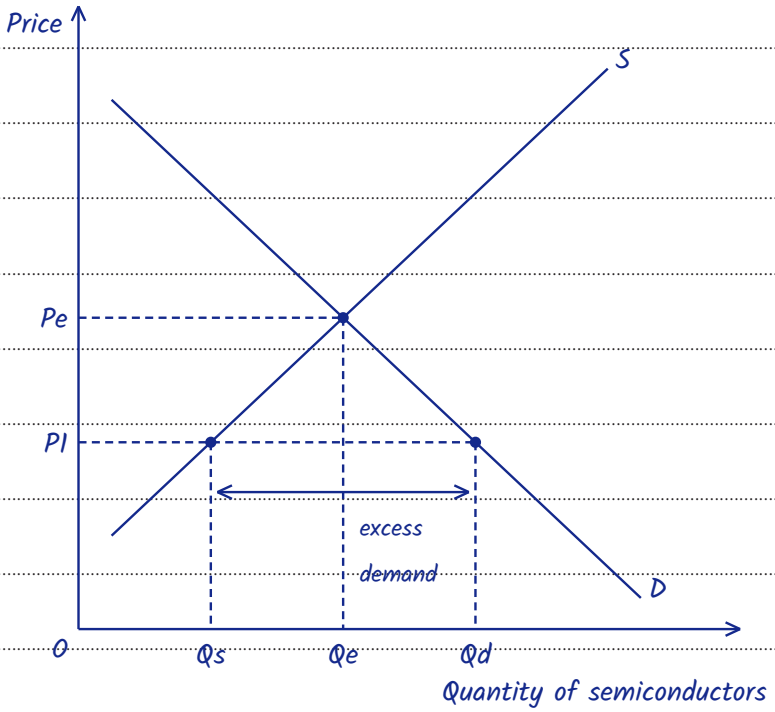


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(d) With reference to Extract B and Figure 1, examine **two** likely effects of excess demand for semiconductors on car manufacturers.

(8)

Excess demand is where the quantity demanded is greater than the quantity supplied at the current price. In 2021 global demand for cars recovered, raising the derived demand for semiconductors, but semiconductor manufacturers could not supply the amount demanded, so at price PI quantity demanded Qd is greater than quantity supplied Qs.



The first effect is lower output. Without enough semiconductors, car manufacturers cannot finish cars, so many reduced production: Volkswagen produced 100 000 fewer cars in the first quarter of 2021, car production in Japan fell by 19% in May 2021 and GM shut down production in July and August. With fewer cars to sell, sales revenue falls. Figure 1 shows revenues fell by $25.5bn in China, $13.4bn in Europe and $5.2bn in North America, about $60.7bn in total. As fixed costs such as factories still have to be paid, profits fall, and firms may employ fewer workers.

However, the size of this effect varies. China lost $25.5bn, nearly five times North America's $5.2bn, so firms that stockpiled semiconductors or had better supply contracts were affected far

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less. Also, the shortage of new cars raised car prices, which partly offsets the fall in quantity sold, so revenue falls by less than output.

The second effect is lower quality products. Some manufacturers removed features that need semiconductors: GM removed wireless charging, Renault stopped installing large screens and Nissan removed navigation systems. This lets them keep producing cars, but customers do not get the features they expect, which may damage the firm's reputation and lose future sales to rivals.

However, this is likely to be short term. Once semiconductor manufacturers build more capacity, supply will rise and the excess demand will disappear, so features can be restored. The effect also depends on how important the feature is: buyers may accept a car without a large screen if they can get the car sooner, especially as used car prices doubled in the USA.

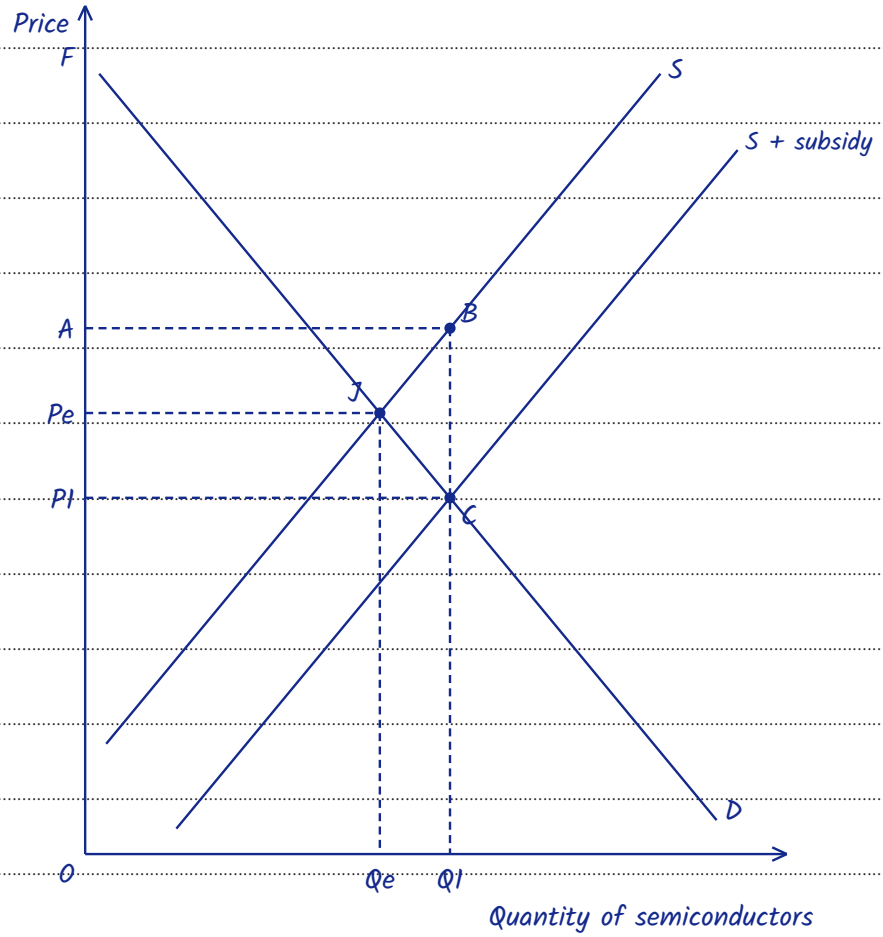
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(e) With reference to Extract C and your own knowledge, discuss the possible microeconomic effects of the subsidies paid to semiconductor manufacturers in the USA.

Illustrate your answer with an appropriate diagram.

(14)

A subsidy is a payment from the government to producers that lowers their costs of production. Between 2000 and 2020 the US Government gave no subsidies to semiconductor manufacturers, but in 2021 it provided $52 billion, because 88% of the semiconductors it needed were imported, up from 63% in 1990. As shown below, the subsidy shifts supply to the right from S to S + subsidy.



The first effect is on price and quantity. Lower costs mean the price of semiconductors falls from Pe to PI and output rises from Qe to QI. Consumer surplus for buyers such as car and smartphone makers rises from FJPe to FCPI, so their own costs fall and they can produce more

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cars, helping to end the shortages that cut car production in 2021.

The second effect is on producers. They receive A per unit (PI plus the subsidy) and sell more, so revenue, producer surplus and profits rise. Extract C says the subsidies may make it more profitable to produce in the USA than in Asia, where costs are lower, and at least seven new factories are hoped for. This creates jobs in semiconductor manufacturing and reduces reliance on imports, so US firms are less exposed to supply shortages abroad.

However, the subsidy costs the government the area ABCPI. At $52 billion this has a large opportunity cost, as the money could have been spent on healthcare or education, or it may require higher taxes. Part of the subsidy also goes to producers rather than lowering prices: the consumer gets only Pe – PI of the subsidy per unit, while producers keep A – Pe.

There is also a time lag. A semiconductor factory typically takes three years to become fully operational, so in the short run supply is inelastic and the subsidy will do little to ease the shortage; most of it may simply raise producer profits. The full effect on price will only be felt in the long run.

The subsidy may also create external costs. More production uses acids and toxic gases that may cause cancer, and uses large amounts of water, creating contaminated waste water. These costs fall on local residents, so the subsidy may cause overproduction where marginal social cost exceeds marginal social benefit. These costs are hard to measure, so the government may underestimate them.

The effect also depends on price elasticity of demand. If buyers are loyal to particular Asian suppliers and their demand is inelastic, they may not switch to new US suppliers, so the rise in

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quantity is small. Asian producers also have lower costs, so US firms may need the subsidy permanently to compete, which risks inefficiency.

Overall, the subsidy is likely to lower semiconductor prices and increase US production and employment, reducing the 88% reliance on imports. However, the benefits will mainly come in the long run after the three-year lag, and must be weighed against the $52 billion opportunity cost and the external costs of pollution, so regulation of waste water should go alongside it.

(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 In 2020 the Fraser Institute identified Hong Kong as being the closest to a free market economy in the world. This was based on Hong Kong's low tax rates, low government spending and the low level of business regulation.

Evaluate the advantages of a free market economy.

(Total for Question 13 = 20 marks)

OR

14 The Government of the United Arab Emirates provides its citizens with free primary and secondary education and free healthcare. In 2020 the Government announced that it would spend $136 million on flood defences and that it will build the world's tallest lighthouse in Dubai.

Evaluate the advantages of state provision of goods and services.

(Total for Question 14 = 20 marks)

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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** ☒

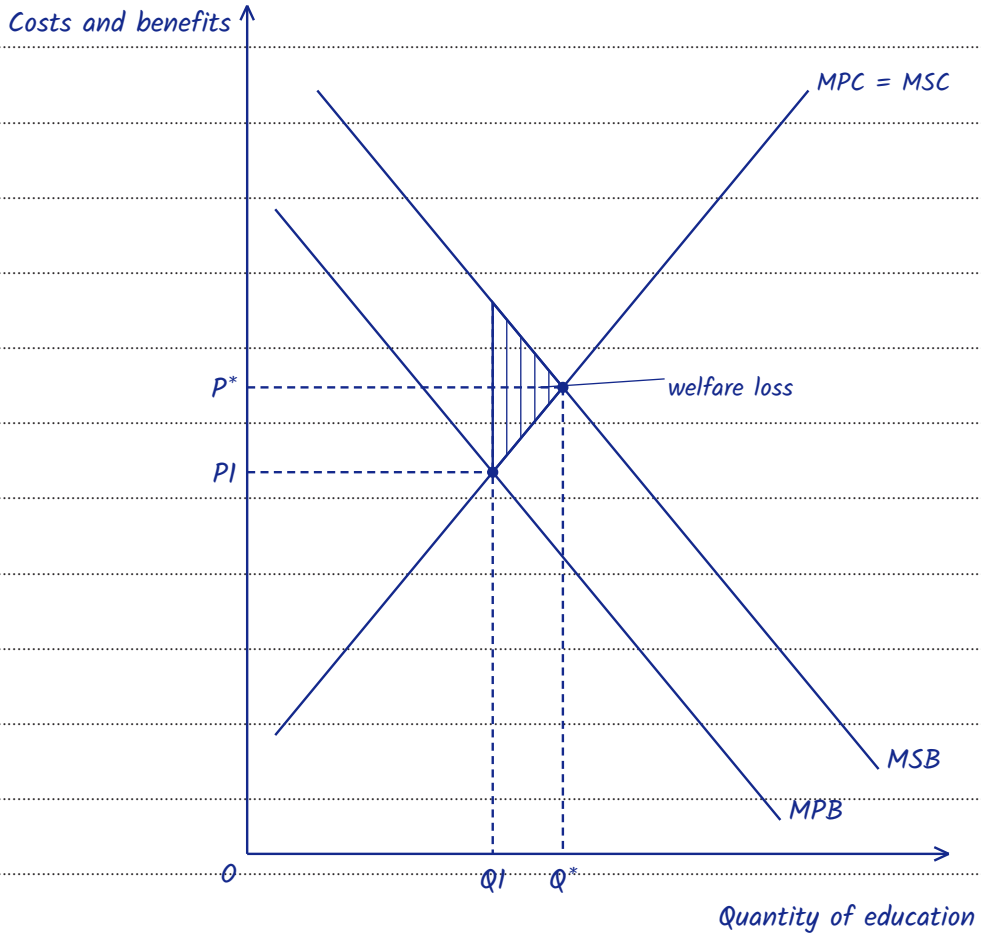
Write your answer here:

State provision is where the government uses tax revenue to provide goods and services directly, often free at the point of use. The UAE Government provides its citizens with free primary and secondary education and healthcare, and is spending $136 million on flood defences and building the world's tallest lighthouse in Dubai.

The first advantage is that it solves the underprovision of public goods. Flood defences and lighthouses are non-excludable, as once built everyone nearby is protected and every ship can see the light, and non-rival, as one person benefiting does not reduce the benefit to others. This creates a free rider problem: people will not pay as they can benefit anyway, so private firms cannot make a profit and the free market would provide none at all. This missing market means state provision is the only way to protect homes from flooding and stop ships hitting rocks.

The second advantage is that it corrects the underconsumption of merit goods with external benefits. Education and healthcare create positive externalities: a better educated, healthier workforce is more productive, earns more and pays more tax, and vaccination reduces the spread of disease to third parties. In a free market people consider only their private benefit (MPB) and there is an information gap, as they underestimate the long-term benefits, so consumption is only Q1, where MPB = MSC, as shown on the diagram.

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The socially optimal level is Q*, where MSB = MSC, so there is underconsumption of Q1Q* and the shaded triangle is the welfare loss. By providing education and healthcare free, the UAE Government raises consumption towards Q*, removing the welfare loss and improving allocative efficiency.

A third advantage is equity. Without state provision, households on low incomes could not afford healthcare or schooling, so their children would leave school early and earn low incomes, keeping the family in poverty. Free provision gives everyone equal access according to need rather than ability to pay, which reduces inequality and raises the country's long-run productive potential. It also prevents private monopolies from exploiting patients and parents by charging high prices, and creates jobs for teachers, doctors and construction workers.

However, state provision can lead to government failure. Governments face information gaps: it

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is very hard to place a value on the external benefits of education or the benefit of flood defences, so they may provide too much or too little. Whether $136 million on flood defences is worthwhile depends on the value of the property and lives protected, and a record-breaking lighthouse may cost far more than is needed to guide ships safely.

State providers also lack the profit motive and competition. There is less incentive to cut costs or improve quality, so state hospitals may have long waiting lists and state schools may be less efficient than private ones. Consumers also have less choice, and because services are free, there may be excess demand and moral hazard, for example people overusing doctors for minor illnesses.

Every dollar spent also has an opportunity cost. Money spent on free healthcare, education, flood defences and a lighthouse cannot be spent on other priorities such as infrastructure, or it must be funded by higher taxes, which may reduce incentives to work and invest. The UAE has large oil revenues and low taxes, so this cost may be smaller there than in many other countries.

The case for state provision is also stronger for some goods than others. For pure public goods such as flood defences and lighthouses there is no private alternative, so the advantages are clear. For education and healthcare, private firms do supply them, so the government could instead use subsidies or provide information, which keeps competition and choice while still increasing consumption. Information failure is also reduced today because information is widely available on the internet.

In conclusion, state provision has clear advantages for public goods, where the free market would supply nothing, and for merit goods such as education and healthcare, where it reduces underconsumption and inequality. However, the size of these advantages depends on how

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efficiently the government provides the services and on the opportunity cost of the spending.

With high oil revenues, the UAE is well placed to gain the benefits, as long as spending is targeted where the social benefits are greatest and private provision would fail.

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TOTAL FOR PAPER = 80 MARKS

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Pearson Edexcel International Advanced Level

Time 1 hour 45 minutes

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 semiconductor market

Extract A Semiconductor shortage

Semiconductors are used in a wide range of goods including cars, washing machines and smartphones. In Quarter 1 2021 the price of semiconductors increased on average by 20%. This was partly caused by a rise in the costs of steel and copper that are used in the production of semiconductors. A further cause was the global health crisis that led to a significant increase in the demand for laptops, tablets and smartphones. Semiconductors are essential components of these devices.

The supply of semiconductors is inelastic. Manufacturers of semiconductors were operating at 100% capacity and therefore struggled to respond to the increase in demand. Semiconductor manufacturers tried to increase production but it was not possible to make additional capacity available for a considerable time.

Extract B Excess demand for semiconductors affects car manufacturers

In 2021 the global demand for cars increased following very low sales in 2020. This increased the demand for semiconductors. However, the manufacturers of semiconductors were unable to supply the amount demanded, resulting in excess demand. As a result, many car manufacturers reduced production. For example:

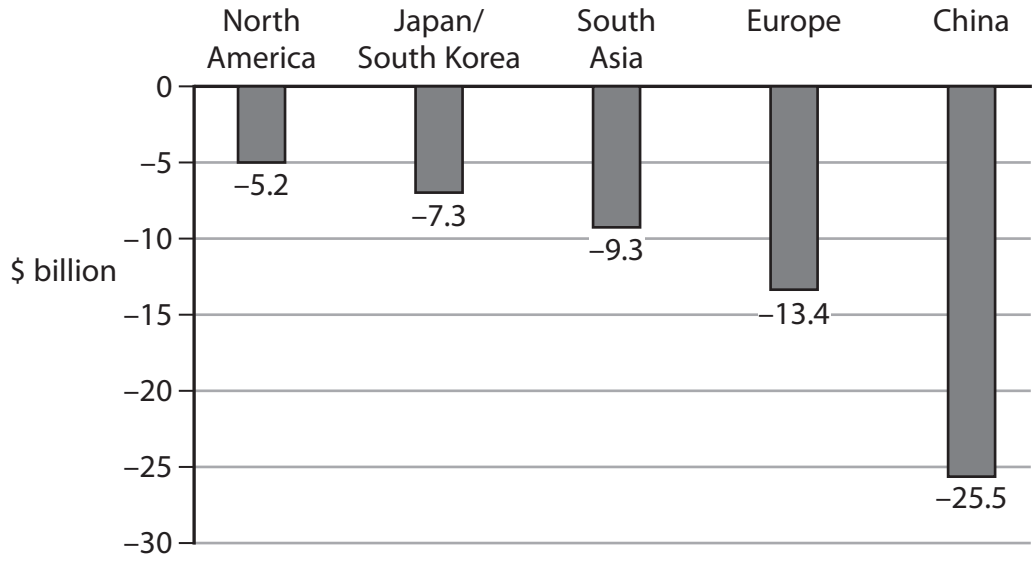
- Volkswagen produced 100 000 fewer cars in the first quarter of 2021
- Car production in Japan decreased by 19% in May 2021
- General Motors (GM) shut down production in July and August 2021.

Some car manufacturers removed features that require semiconductors. For example, GM removed wireless charging features, Renault stopped installing large screens and Nissan removed navigation systems.

The shortage of new cars led to higher prices and many consumers had to buy used cars whose prices increased also. In the USA the average price of used cars doubled in the first 6 months of 2021.

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Figure 1 Fall in the revenues of car manufacturers in 2021, $ billion, by region



Extract C Subsidies to semiconductor manufacturers in the USA

In 1990 63% of semiconductors required by manufacturers in the USA were imported. By 2020 this had increased to 88%. Between 2000 and 2020 the US Government made no subsidy payments to semiconductor manufacturers. However, in 2021 it provided subsidies of $52 billion. The US Government wanted to reduce its reliance on importing semiconductors. The subsidies may make it more profitable to produce semiconductors in the USA rather than in Asia, where production costs are lower. It is hoped that the subsidies will result in at least seven new semiconductor factories being built in the USA. However, it typically takes three years before a semiconductor factory is fully operational.

There are concerns that increased production of semiconductors will cause a range of external costs. Production involves acids and toxic gases that may cause cancer. A large amount of water is required to manufacture semiconductors and this creates contaminated waste water.

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Acknowledgements

Extract A adapted from https://uk.expensereduction.com/news/semiconductor-shortage-to-cause-rise-in-prices-in-2021/

Extract B adapted from:

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Figure 1 adapted from https://www.bloomberg.com/news/articles/2021-02-05/chip-shortage-spirals-beyond-cars-to-phones-and-game-consoles

Extract C adapted from:

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