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 is an example of government failure?

- ☐ **A** Overconsumption of sugar that creates external costs
- ☒ **B** Smuggling of petrol resulting from the introduction of an indirect tax
- ☐ **C** An increase in the price of timber that creates an incentive to increase its production
- ☐ **D** Government provision of flood defences to resolve the free rider problem

(Total for Question 1 = 1 mark)

2 Which **one** of the following is most likely to have a forward market?

- ☒ **A** Gold
- ☐ **B** Housing
- ☐ **C** Higher education
- ☐ **D** Street lighting

(Total for Question 2 = 1 mark)

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3 The table shows the estimated cross elasticity of demand in Indonesia for four goods with respect to a change in the price of rice.

Goods	Cross elasticity of demand
Vegetables	–0.05
Meat	–0.19
Fish	+0.40
Maize	+1.25

(Source adapted from https://econbeh.blogspot.com/2019/05/some-estimates-of-cross-price-elasticity.html)

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

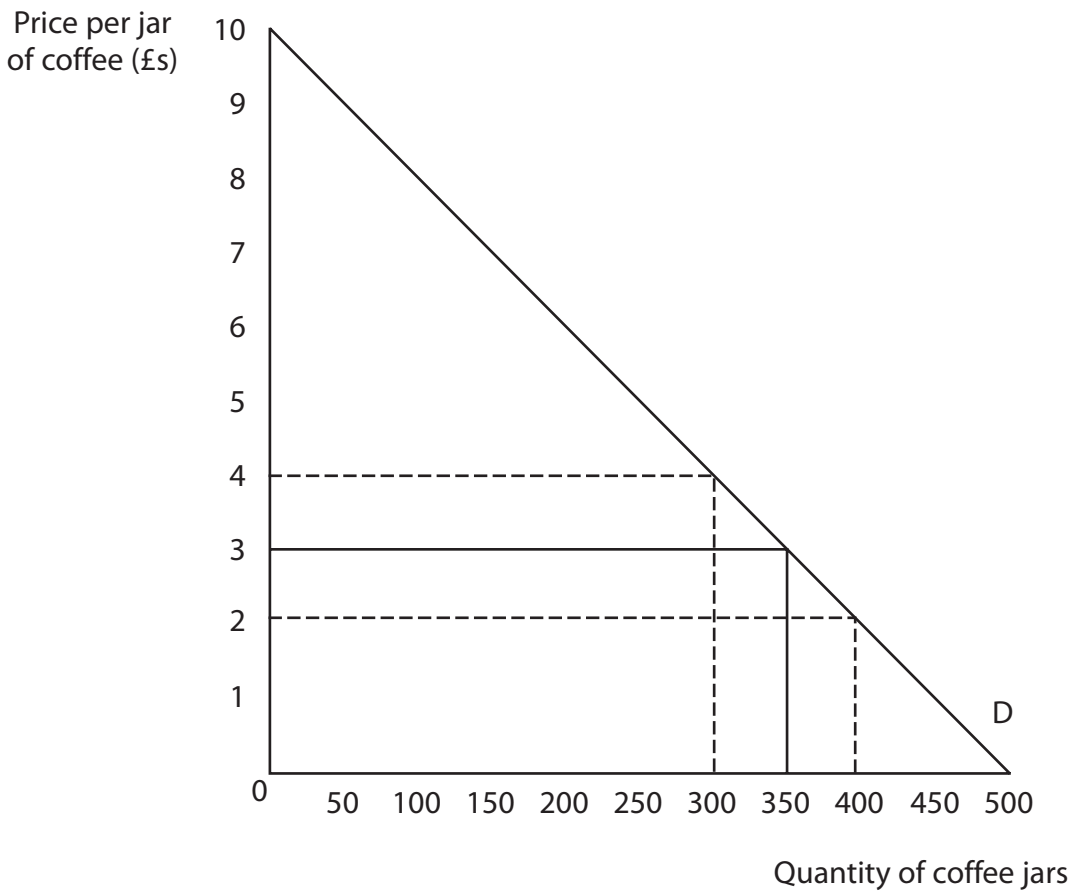
- ☒ **A** Vegetables and rice are normal goods
- ☒ **B** Meat and rice are inferior goods
- ☒ **C** Fish is a complement for rice
- ☒ **D** Maize is a substitute for rice

(Total for Question 3 = 1 mark)

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4 The diagram shows the demand curve for a 500 g jar of coffee. The price is currently £3 and 350 jars are sold.



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

- ☒ **A** The demand for coffee is income inelastic
- ☒ **B** The supply of coffee is price elastic
- ☒ **C** An increase in the price of a jar of coffee by £1 will increase total revenue
- ☒ **D** A decrease in the price of a jar of coffee by £1 will increase total revenue

(Total for Question 4 = 1 mark)

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5 In April 2020 electricity prices increased on average by 10% in the UK. In the same month, a record number of 668 371 consumers switched to cheaper electricity suppliers.

Which **one** of the following can explain the behaviour of those consumers who switched to cheaper electricity suppliers?

- ☒ **A** Consumers experienced habitual behaviour
- ☒ **B** Consumers aimed to maximise their utility
- ☒ **C** Consumers had poor computational skills
- ☒ **D** Consumers aimed to minimise their utility

(Total for Question 5 = 1 mark)

6 In a particular year, a 4% rise in real incomes caused the demand for cinema tickets to increase from 250 000 to 290 000.

Which **one** of the following shows the value of income elasticity of demand?

- ☒ **A** –4.00
- ☒ **B** –0.25
- ☒ **C** +0.25
- ☒ **D** +4.00

(Total for Question 6 = 1 mark)

TOTAL FOR SECTION A = 6 MARKS

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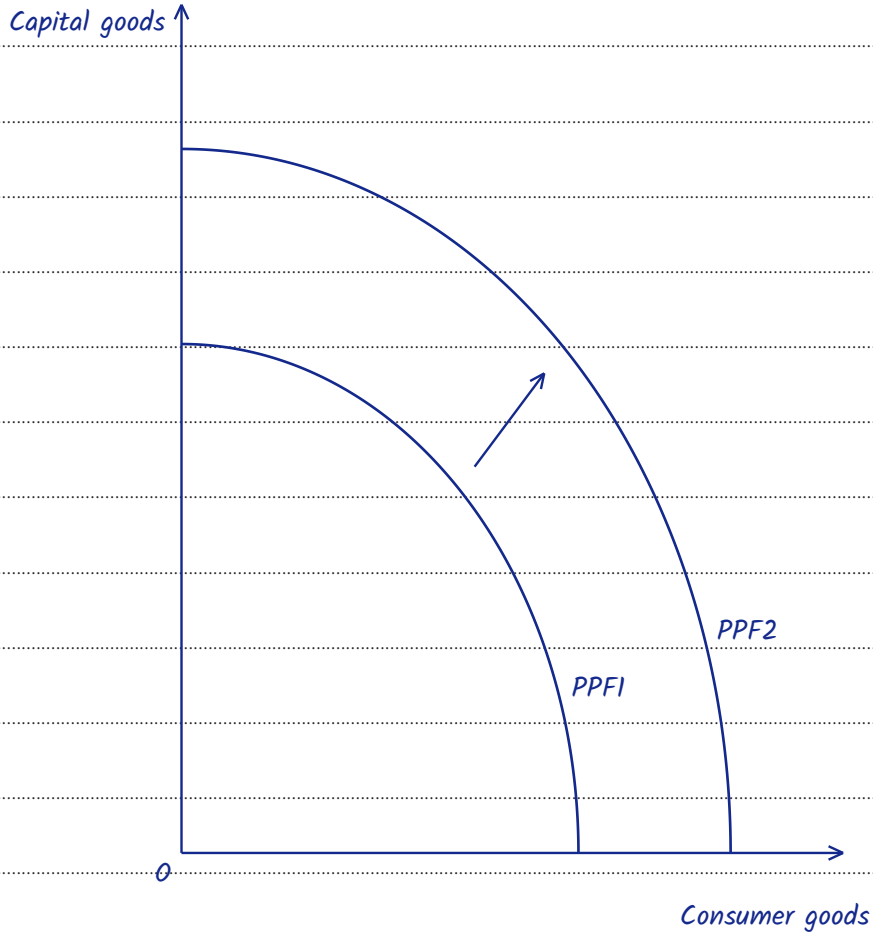
SECTION B

Answer ALL questions in this section in the space provided.

7 In 2018 there were 1.59 million immigrants arriving in Germany and 1.19 million emigrants leaving Germany.

Draw a diagram to illustrate the likely impact of this population change on Germany's production possibility frontier.

Include an arrow to show the direction of the shift.



Net migration into Germany was 1.59m – 1.19m = 0.4 million people in 2018. This increases the size of the labour force, so the quantity of factors of production rises and the productive potential of the economy increases. The PPF shifts outwards from PPF1 to PPF2.

(Total for Question 7 = 4 marks)

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8 Between 2018 and 2019 investment expenditure on capital goods in China fell from 47% of GDP to 43% of GDP. Over the same period, consumer expenditure increased from 38.7% of GDP to 38.8% of GDP.

With reference to China, explain the difference between 'capital goods' and 'consumer goods'.

Capital goods are man-made aids to production, such as machinery, tools, vehicles and buildings, which are used to produce other goods and services rather than being consumed. Consumer goods are goods bought by households for their own use to satisfy current needs and wants and gain utility, such as food, clothing and phones.

In China, spending on capital goods fell from 47% of GDP in 2018 to 43% in 2019, a fall of 4 percentage points, while consumer expenditure rose slightly from 38.7% to 38.8% of GDP, a rise of 0.1 percentage points.

So China is giving up some future production in exchange for current consumption: the shift may raise living standards today, but with less investment in capital goods the productive potential grows more slowly, so the future rate of economic growth may fall.

(Total for Question 8 = 4 marks)

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9 Between 2017 and 2022 the Singapore Government replaced 95 000 streetlights along its roads.

Explain **one** microeconomic reason why the Singapore Government provides streetlights.

One reason is that streetlights are a public good, which means they are non-excludable and non-rival. Non-excludable means people who do not pay cannot be stopped from benefiting; once a streetlight is on, every driver and pedestrian on the road can see by it. Non-rival means one person using the light does not reduce the amount available to others.

Because of non-excludability, consumers have an incentive to free ride, waiting for someone else to pay. Private firms therefore cannot charge for streetlights or make a profit from supplying them, so the free market would provide none at all. This missing market is a market failure, as resources are not allocated to a good society values.

So the Singapore Government steps in and provides streetlights itself, funded by taxation, replacing 95 000 of them between 2017 and 2022, an average of 19 000 a year, so that the roads are safe and the market failure is corrected.

(Total for Question 9 = 4 marks)

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10 The table shows the average world price of wheat per metric tonne and the quantity of wheat supplied globally in 2019 and 2020.

	Average wheat price per metric tonne	Quantity of wheat supplied, metric tonnes
2019	$152.97	732 million
2020	$176.48	777 million

Ceteris paribus, calculate the price elasticity of supply of wheat. Show your workings.

Price elasticity of supply (PES) = % change in quantity supplied ÷ % change in price

% change in quantity supplied = (777m − 732m) ÷ 732m × 100

= 45m ÷ 732m × 100 = 6.15%

% change in price = ($176.48 − $152.97) ÷ $152.97 × 100

= $23.51 ÷ $152.97 × 100 = 15.37%

PES = 6.15 ÷ 15.37 = +0.40 (2 d.p.)

PES is between 0 and 1, so the supply of wheat is price inelastic: a 15.37% rise in price led to a smaller 6.15% rise in quantity supplied, as wheat takes a growing season to plant and harvest.

(Total for Question 10 = 4 marks)

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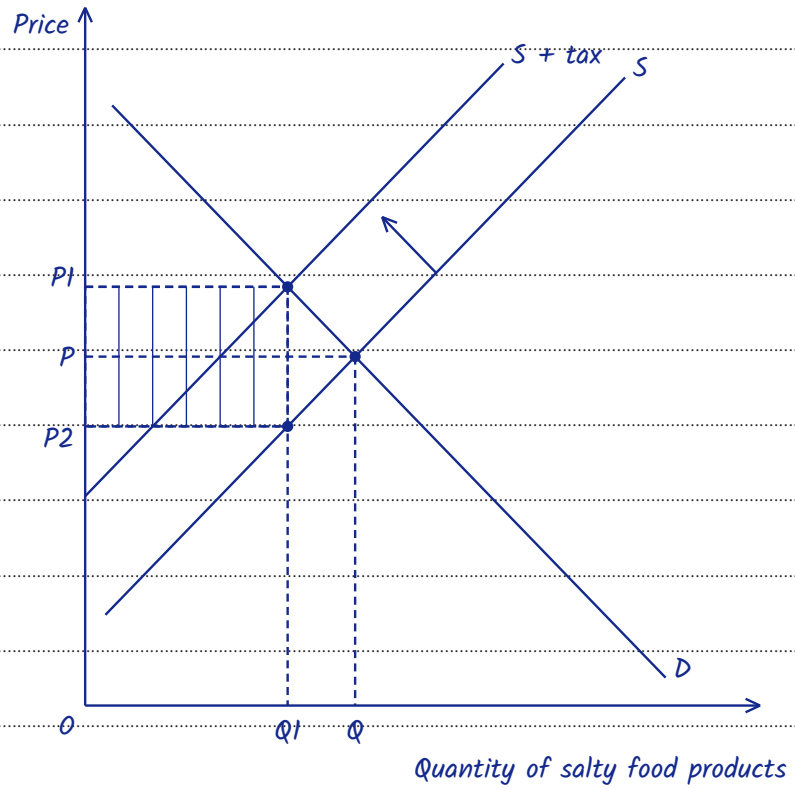
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11 Eating too much salt is associated with a higher risk of heart disease and stomach cancer. Every year 1.5 million deaths are attributed to excess salt in food. In the UK, the National Food Strategy recommended that an indirect tax of £6 per kg is introduced on salt added to food by manufacturers.

Explain the impact of the introduction of this indirect tax on the market for food products containing salt added by manufacturers.

Illustrate your answer with an appropriate diagram.

An indirect tax is a tax on expenditure on goods and services. The £6 per kg tax is a specific tax, which raises firms' costs of production by £6 for every kg of salt added.



The tax shifts supply to the left from S to S + tax (vertical distance £6 per kg). Price rises from P to P1 and quantity falls from Q to Q1, so less salty food is eaten. Producers receive only P2, and the shaded area P1P2 × Q1 is the tax revenue for the government.

(Total for Question 11 = 4 marks)

TOTAL FOR SECTION B = 20 MARKS

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SECTION C

Study Figure 1, Extract A, Figure 2 and Extract B 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 B, line 3).

(2)

(b) With reference to Figure 2, explain the difference between 'renewable resources' and 'non renewable resources'.

(4)

(c) With reference to Figure 1 and Extract A, analyse **two** reasons why 'the world price of copper increased significantly' between May and December 2020.

Illustrate your answer with a supply and demand diagram.

(6)

(d) With reference to Extract A, examine **two** likely effects of an increase in the price of copper on plumbing firms that replace water pipes in customers' homes.

(8)

(e) With reference to Extract B and your own knowledge, discuss the possible effects of a subsidy paid to manufacturers of battery electric buses (BEBs).

Illustrate your answer with an appropriate diagram.

(14)

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12 (a) Define the term 'external costs' (Extract B, line 3).

(2)

External costs are the negative spillover costs of production or consumption that fall on third parties who are not part of the transaction and are not compensated, so marginal social cost is greater than marginal private cost, eg reduced air quality from diesel buses.

(b) With reference to Figure 2, explain the difference between 'renewable resources' and 'non renewable resources'.

(4)

Renewable resources are resources that replenish themselves naturally, so they can be used again and again and will not run out. In Denmark in 2018 these were wind (40%), hydro (12%), solar (2%) and other renewable resources (22%), so 76% of electricity came from renewable resources.

Non-renewable resources are finite: once they are used up they cannot be replaced, so stocks will eventually run out. In Denmark these were coal (17%), natural gas (6%) and oil (1%), so only 24% of electricity came from non-renewable resources.

So the difference is that renewable resources such as wind will not run out however much is used, whereas using coal, gas or oil today leaves less available for the future.

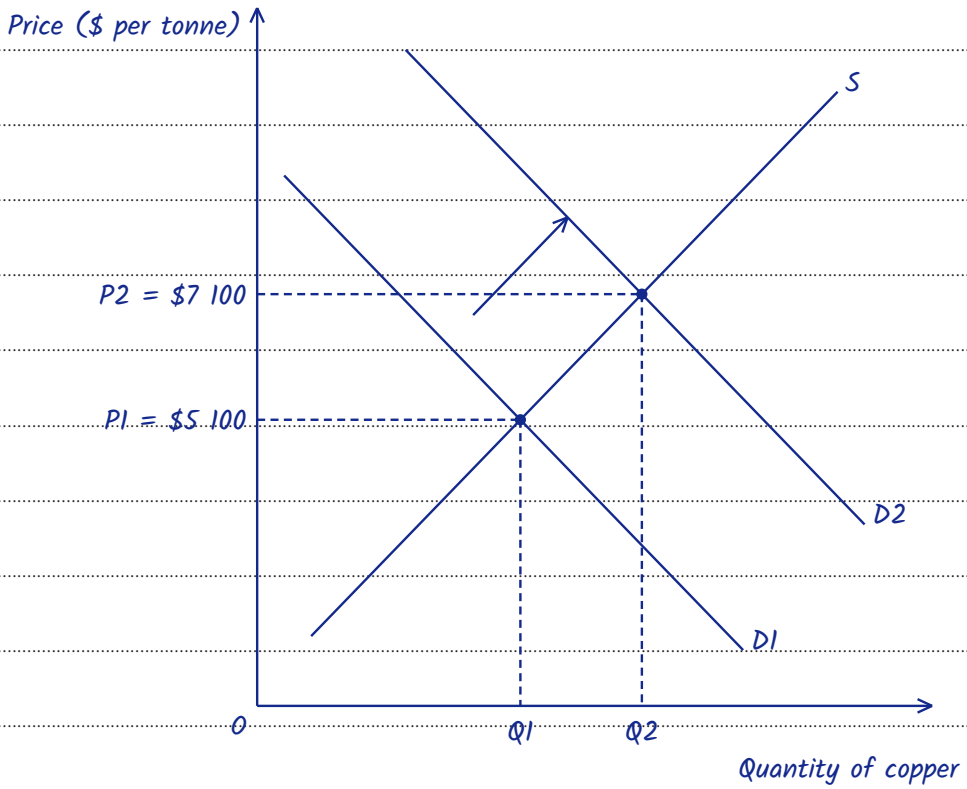
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(c) With reference to Figure 1 and Extract A, analyse **two** reasons why 'the world price of copper increased significantly' between May and December 2020.

Illustrate your answer with a supply and demand diagram.

(6)

Figure 1 shows the world price of copper rose from about $5 100 per tonne in May 2020 to about $7 100 in December 2020, an increase of $2 000, or about 39% (2 000 ÷ 5 100 × 100).



The first reason is speculation. Speculators expected the global rate of economic growth to recover from the global health crisis, so they expected firms to need more copper and its price to rise. They started to buy more copper to sell later at a profit, which increased demand and shifted the demand curve to the right from D1 to D2.

The second reason is that the Chinese Government made a substantial investment in infrastructure that required copper, for example for wiring and power networks. This increased the derived demand for copper, shifting demand further to the right. The growing output of electric vehicles, each needing about 59 kg of copper, added to this.

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With supply unchanged, there is excess demand at P1, so the price is bid up to P2 and quantity extends from Q1 to Q2. Because the supply of copper is price inelastic in the short run (new mines take years to open), the increase in demand caused a large rise in price.

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(d) With reference to Extract A, examine **two** likely effects of an increase in the price of copper on plumbing firms that replace water pipes in customers' homes.

(8)

Copper pipes are a major raw material for plumbing firms, and Extract A says most plumbers prefer copper pipes to plastic ones. With the world price of copper up by about 39%, from $5 100 to $7 100 per tonne, the price of copper pipes is likely to increase significantly in the future.

The first effect is that the firms' costs of production will increase. Each pipe replacement now costs more to carry out, so at every price plumbing firms are willing to supply fewer jobs and the supply of plumbing services shifts to the left. If firms pass the higher costs on, they must raise the prices they charge customers, which causes a contraction in demand for pipe replacement, as some households delay the work or use a cheaper rival.

However, the size of this effect depends on how large a share of total costs copper pipes are. Labour is probably the largest cost for a plumber, so a 39% rise in copper prices may only raise total costs by a small percentage. It also depends on the price elasticity of demand for plumbing: a burst or leaking water pipe must be fixed urgently, so demand is likely to be price inelastic, and firms can pass most of the cost on to customers without losing many jobs.

The second effect is that profits are likely to fall. If competition stops firms raising prices by the full increase in costs, the profit margin on each job falls, and producer surplus falls as price received rises by less than costs and quantity falls. Alternatively firms may substitute cheaper plastic pipes, which protects profits but may reduce the quality of the work and the firm's reputation.

However, because most plumbers prefer copper, substitution is unlikely, at least in the short run. Firms that stockpiled copper pipes before the price rise will not face higher costs for some time,

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and if the price rise is temporary, as speculative demand fades, profits may only fall briefly.

Overall, the main effect is likely to be higher prices for customers rather than a big fall in profits, because demand for replacing water pipes is price inelastic.

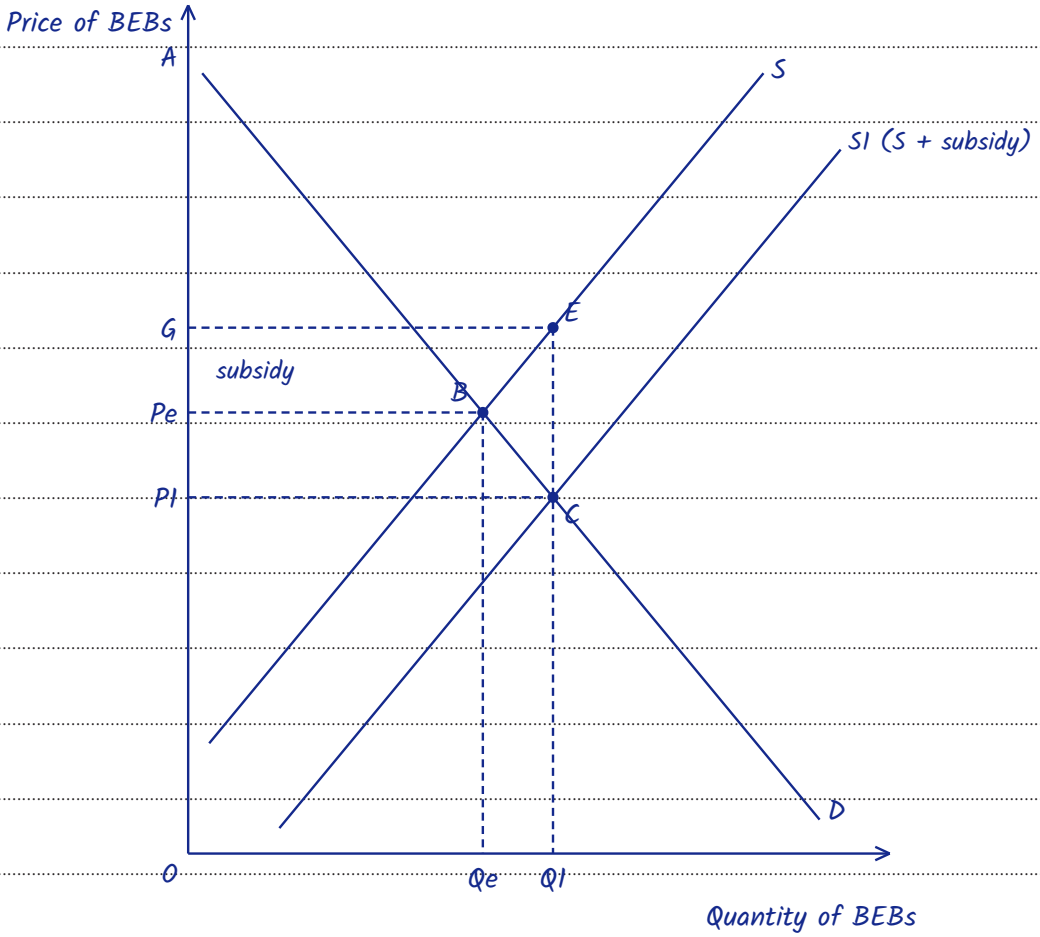
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(e) With reference to Extract B and your own knowledge, discuss the possible effects of a subsidy paid to manufacturers of battery electric buses (BEBs).

Illustrate your answer with an appropriate diagram.

(14)

A subsidy is a payment by the government to producers, usually per unit produced, that lowers their costs of production. The US Government allocated $979 million of subsidies to increase the number of BEBs. As shown in the diagram, the subsidy shifts the supply of BEBs to the right from S to S1 by the amount of the subsidy per unit (GP1).



The first effect is on the price and quantity of BEBs. The price falls from Pe to P1 and the quantity bought rises from Qe to Q1, so consumer surplus for transport companies rises from area APeB to AP1C. In 2018 a BEB cost $887 000 compared with $480 000 for a diesel bus, so the subsidy helps to close this $407 000 gap. As a BEB is 2.5 times cheaper to run and has far lower maintenance costs, more transport companies will switch from diesel buses to BEBs.

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The second effect is a fall in external costs. Diesel buses reduce air quality in city centres, and children who ride them are more likely to develop asthma and cancer. As BEBs replace diesel buses, greenhouse gas emissions, air pollution and noise pollution fall, so fewer third parties suffer ill health, and public healthcare costs and days lost from work fall.

Thirdly, manufacturers gain. They receive G per bus (the price P1 plus the subsidy) and sell more, so revenue rises from 0PeBQe to 0GEQ1, producer surplus and profits rise and more workers are employed making BEBs. However, jobs may be lost in diesel bus manufacturing.

However, the subsidy has a cost to the government equal to area GECP1, in total $979 million. This has an opportunity cost, as the money could have been spent on healthcare or education, and it may have to be funded by higher taxes or borrowing.

The magnitude of the effect may also be limited. Even with the subsidy, a BEB may still cost more to buy than a diesel bus: if each bus needed a $407 000 subsidy to match the diesel price, $979 million would pay for only about 2 400 buses. The USA had only 0.09% of the 386 000 BEBs in 2018, about 350 buses, compared with 99% in China, so it is starting from a very low base.

The effect also depends on the price elasticity of demand. If transport companies' demand for BEBs is price inelastic, because a BEB can travel only 150 miles on a charge compared with 690 miles for a diesel bus, the lower price will cause only a small extension in demand. Charging infrastructure will also be needed, adding further costs, and in the short run supply is inelastic, so there is a time lag before manufacturers can produce many more BEBs.

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The environmental benefit also depends on how the electricity is generated. BEBs are recharged from the national grid, so if this uses coal or natural gas, emissions are only moved from city centres to power stations; in Denmark 24% of electricity is still non-renewable. Making batteries also creates external costs from mining and disposal.

Overall, the subsidy is likely to lower the price and raise the number of BEBs, cutting external costs in cities where children's health is most at risk. However, the size of the effect depends on the size of the subsidy per bus, the elasticity of demand and investment in charging and renewable electricity, so the benefits are most likely to be felt in the long run.

(Total for Question 12 = 34 marks)

TOTAL FOR SECTION C = 34 MARKS

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SECTION D

Answer ONE question from this section.

Write your answer in the space provided.

EITHER

13 In November 2020 the Government of Sri Lanka introduced a maximum price of Rs 80 per kilogram for white rice. This price was below the market price.

Evaluate the impact of imposing this maximum price on the market for white rice in Sri Lanka.

(Total for Question 13 = 20 marks)

OR

14 In 2019 the proportion of 25 to 34-year-old people who had received university education was 70% in South Korea. In contrast it was 50% in the USA and only 28% in Italy.

Evaluate possible microeconomic reasons why education might be underconsumed.

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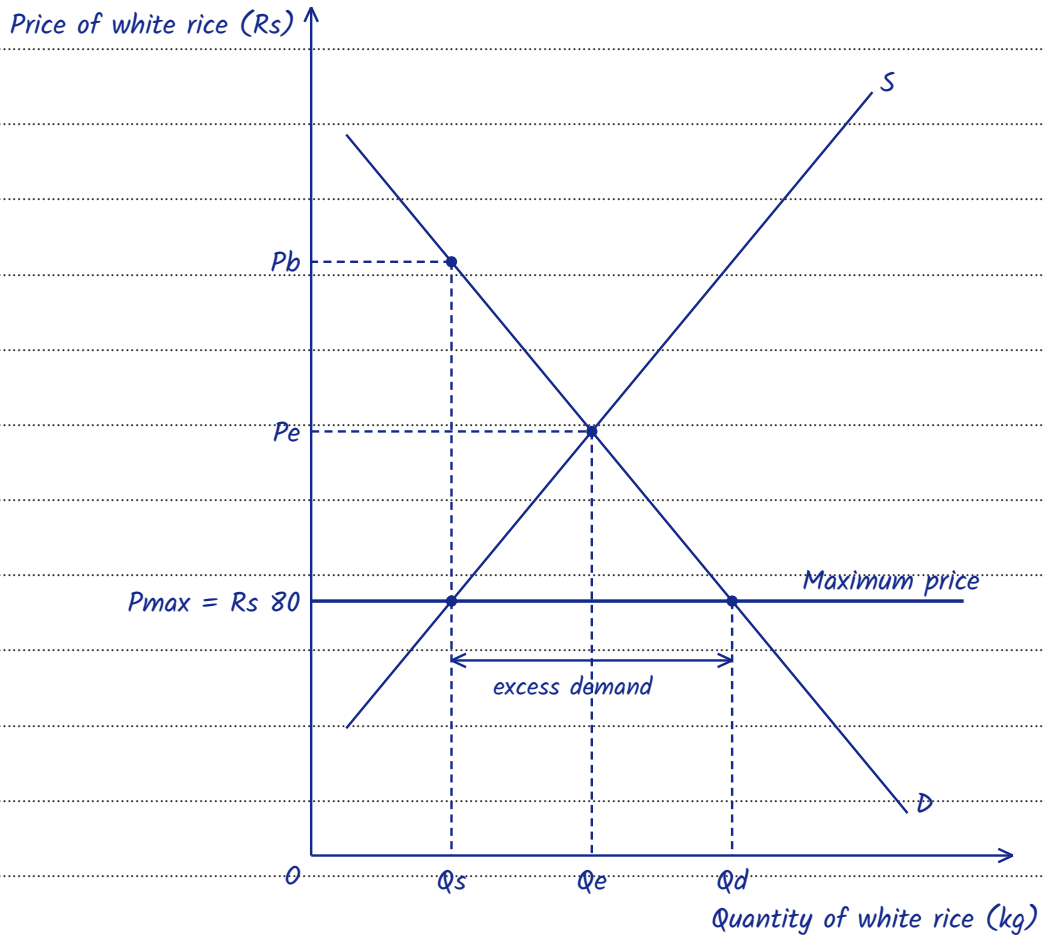
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Indicate which question you are answering by marking a cross in the box ☒. If you change your mind, put a line through the box ☒ and then indicate your new question with a cross ☒.

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

Write your answer here:

A maximum price is a legal price ceiling set by the government, above which firms are not allowed to sell. To have an effect it must be set below the equilibrium price, as in Sri Lanka, where the ceiling of Rs 80 per kilogram for white rice was below the market price.



Before the maximum price, the market for white rice clears at Pe and Qe. At Rs 80, rice becomes cheaper, so there is an extension in demand from Qe to Qd as households buy more, and a contraction in supply from Qe to Qs, because farmers and millers earn less per kilogram and some find it no longer profitable to grow and sell white rice. The market is in disequilibrium, with an excess demand (shortage) of Qd – Qs.

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The main benefit is that white rice stays affordable. Rice is a staple food in Sri Lanka, so it takes up a large share of the budget of poor households. Those who are able to buy rice pay Rs 80 instead of Pe, which increases their consumer surplus and real income, leaving more to spend on other necessities such as healthcare and education. It also stops powerful millers and traders from exploiting consumers by charging high prices.

However, producers lose out. They sell less (Qs instead of Qe) at a lower price, so their revenue, producer surplus and profits fall. Some rice farmers may leave the market and switch to other crops, which may cause unemployment among farm workers and lower living standards in rural areas.

The shortage also means the price mechanism can no longer ration rice. Consumers may have to queue for rice, and the time spent queuing has an opportunity cost, as it could be spent working. Shops may sell only to regular customers, which is unfair. Because some consumers are willing to pay up to Pb for the limited quantity Qs, an informal (black) market is likely to emerge, where rice is sold illegally above Rs 80. This is an example of government failure, as the policy creates new distortions, and the poorest may end up paying more than before or being unable to buy rice at all.

Demand for substitutes may also change. If white rice is cheap, demand for substitutes such as brown rice may fall at first; but if white rice cannot be found in the shops, consumers may switch to brown rice or bread, raising their prices instead.

However, the size of these effects depends on the price elasticities of demand and supply. Rice is a staple with few close substitutes, so demand is likely to be price inelastic, meaning the

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extension in demand is small. In the short run supply is also price inelastic, because the crop has already been planted, so the contraction in supply is small too. The shortage may therefore be quite small at first, but it will grow in the long run as supply becomes more elastic and farmers plant other crops instead.

It also depends on how far below the market price the ceiling is set. We are told only that Rs 80 was below the market price, not by how much. If it is only slightly below, the shortage will be small; if the equilibrium price later falls below Rs 80, for example after a good harvest, the maximum price will have no effect at all.

The shortage could also be reduced by other policies. The government could import rice, or release rice from buffer stocks, to increase supply to Qd at Rs 80. It could also give subsidies to farmers to offset their lower revenue so supply does not fall. However, these policies have an opportunity cost, and monitoring shops to stop illegal trading adds administration and enforcement costs.

Finally, the time period matters. If the maximum price is a short-term response to a temporary rise in price, it can protect poor households without causing lasting damage. If it stays in place for years, the falling supply and growing informal market are more likely to outweigh the benefits.

In conclusion, the maximum price makes white rice cheaper for consumers who can buy it, which matters because rice is a staple for poor households. However, it creates a shortage, lower incomes for farmers and an informal market. The overall impact depends mainly on how far Rs 80 is below the equilibrium price and on the elasticities of demand and supply. It is most likely to be successful as a short-term policy combined with imports or subsidies to farmers, so that

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supply does not fall.

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TOTAL FOR SECTION D = 20 MARKS

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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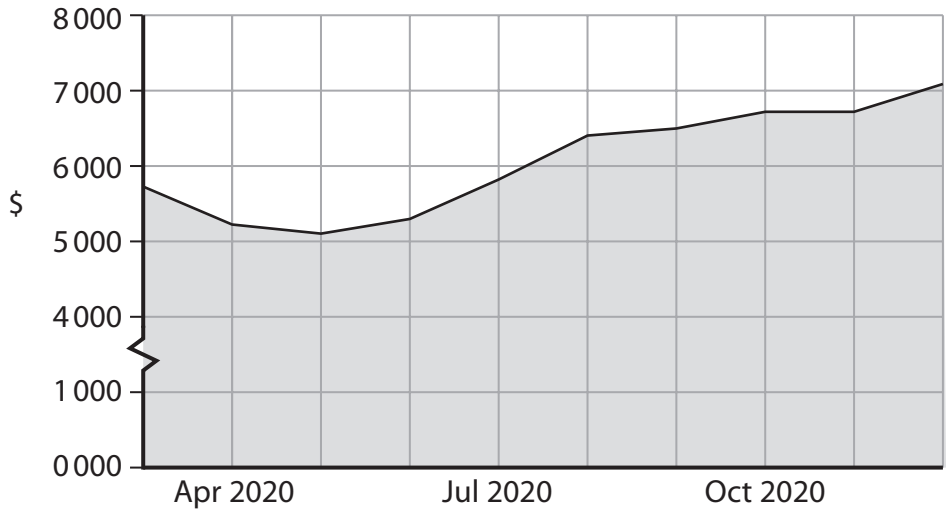
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Sources for use with Section C

The markets for copper, electricity and battery electric buses (BEBs)

Figure 1 World price of copper, $ per metric tonne, March 2020 to December 2020



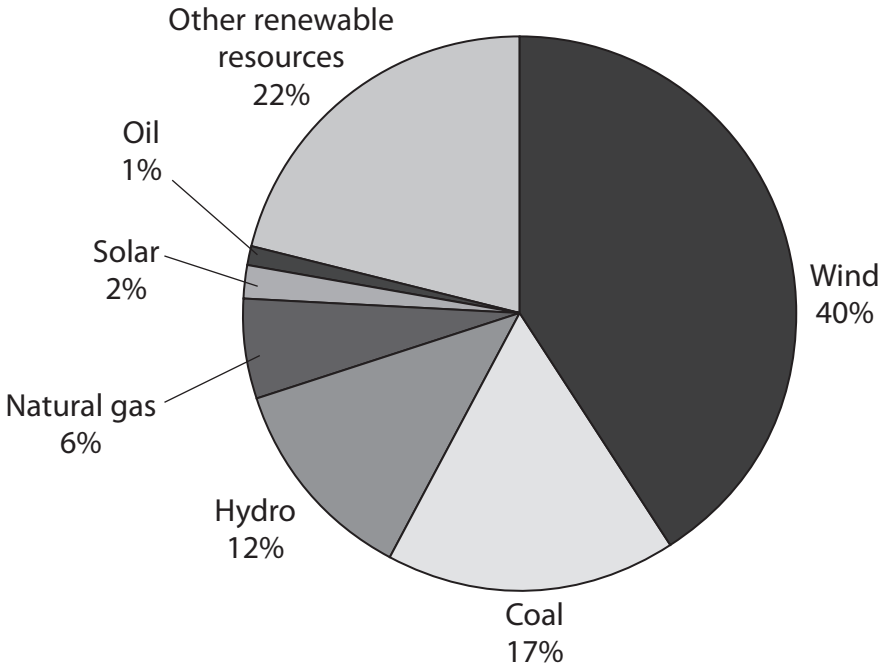
Extract A Copper prices rise

Between May and December 2020 the world price of copper increased significantly. Speculators expected the global rate of economic growth to recover from the global health crisis and started to buy more copper. In addition, the Chinese Government made a substantial investment in infrastructure that required copper. Output of electric vehicles also increased. Each vehicle requires approximately 59 kg of copper in its production.

Most plumbers prefer to use copper pipes rather than plastic pipes. With the increased demand for copper for other purposes, it is likely that the price of copper pipes will increase significantly in the future.

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Figure 2 Electricity generation by different sources in Denmark, 2018



Extract B Battery electric buses (BEBs)

Diesel buses are used in city locations with large concentrations of people. They create external costs, including reducing air quality. Children who ride the bus to school are more likely to develop respiratory diseases, such as asthma, and to have higher rates of cancer.

BEBs are powered by electric batteries that run an electric motor. Bus batteries are recharged using the national electricity grid. BEBs do not have engines that use fossil fuels. Therefore, BEBs help to reduce greenhouse gas emissions and pollution in city centres. They also produce much less noise pollution than diesel buses.

In 2018 the price of a diesel bus was $480 000, whereas the price of a BEB was $887 000. This price difference has started to decrease. For a transport company, it is 2.5 times cheaper to run a BEB than a diesel bus. The maintenance costs are also far lower for a BEB as there are fewer component parts within the motor. On average, a BEB can travel 150 miles on a fully charged battery, whereas a diesel bus can travel 690 miles on a full tank of diesel.

In 2018 there were 386 000 BEBs globally. 99% of these were in China and 0.09% were in the USA. In response, the US Government allocated $979 million of subsidies to increase the number of BEBs.

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Acknowledgements

Figure 1 based on data taken from https://www.indexmundi.com/commodities/?commodity=copper&months=60

Extract A adapted from 'Copper price forecast 2020 and beyond: will the market recover from Covid-19 disruptions?', Nicole Willing, Capital.com, 14 May 2020, https://capital.com/copper-price-forecast-2020#:~:text=The%20world%E2%80%99s%20largest%20copper%20consumer%2C%20China%20is%20expected,far%20more%20copper%20wiring%20than%20fossil%20fuel-based%20systems.

Figure 2 adapted from https://cleantechnica.com/2019/05/20/in-the-danish-elections-everybody-is-fighting-about-who-is-greener-but-does-it-matter/

Extract B adapted from 'Battery Electric Buses: Benefits Outweigh Costs' Environmental and Energy Study Institute, October 2018 https://www.eesi.org/files/FactSheet_Electric_Bus_Benefits_Outweigh_Costs_1018.pdf and https://afdc.energy.gov/files/u/publication/financial_analysis_be_transit_buses.pdf