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:

Monday 11 January 2021

Afternoon (Time: 1 hour 45 minutes)

Paper Reference **WEC11/01**

Economics

International Advanced Subsidiary
Paper 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 is an example of government failure?

- ☐ **A** Government intervention leads to a net welfare gain
- ☒ **B** A new environmental regulation leads to excessive administrative costs
- ☐ **C** Speculators cause a market bubble to emerge in the housing market
- ☐ **D** Free riders lead to the underprovision of public goods

(Total for Question 1 = 1 mark)

2 In 2018 government spending in South Korea accounted for 30.3% of GDP.
In Denmark government spending accounted for 52.1% of GDP.

Which **one** of the following describes economies where resources are allocated by both the government and the price mechanism?

- ☐ **A** Free market
- ☐ **B** Command
- ☒ **C** Mixed
- ☐ **D** Irrational

(Total for Question 2 = 1 mark)

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

- ☐ **A** Tablet computers
- ☐ **B** Designer clothing
- ☐ **C** Housing
- ☒ **D** Copper

(Total for Question 3 = 1 mark)

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4 The table shows the total utility obtained as a consumer drinks milk.

Glasses of milk	Total utility
1	2
2	5
3	8
4	10
5	9
6	4

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

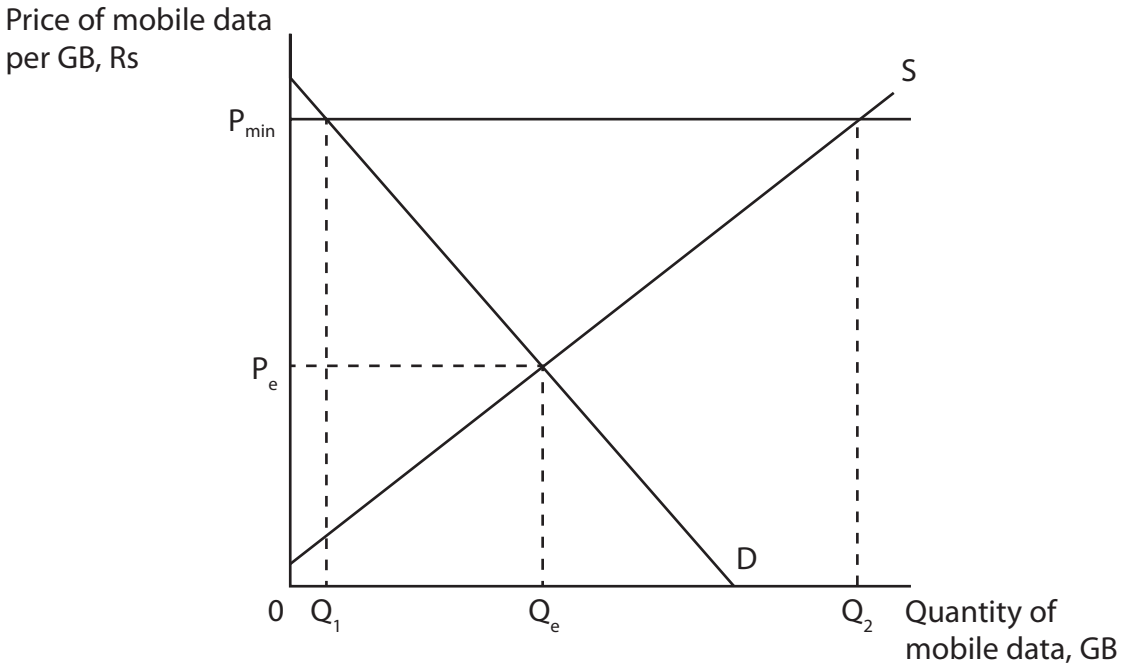
- ☒ **A** Utility is maximised when three glasses of milk are consumed
- ☒ **B** Diminishing marginal utility sets in with the consumption of the fourth glass of milk
- ☒ **C** Diminishing marginal utility sets in with the consumption of the fifth glass of milk
- ☒ **D** Utility is maximised when six glasses of milk are consumed

(Total for Question 4 = 1 mark)

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5 In India, Vodafone has requested that the government imposes a minimum price for mobile data of Rs35 per gigabyte (GB). The current market price is Rs5. The diagram shows the possible impact of a minimum price introduced at Pmin.



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

- ☒ **A** Excess supply is Q_1Q_2
- ☒ **B** Excess demand is Q_1Q_2
- ☒ **C** Supply contracts from Q_e to Q_2
- ☒ **D** Demand extends from Q_e to Q_1

(Total for Question 5 = 1 mark)

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6 The table shows the estimated income elasticity of demand for various items.

	Income elasticity of demand
Cars	+2.46
Furniture	+1.48
Petrol	+0.48
Public transport	–0.37

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

- ☒ **A** A 10% increase in income leads to a 24.6% decrease in demand for cars
- ☒ **B** A 10% increase in income leads to a 14.8% decrease in demand for furniture
- ☒ **C** A 5% increase in income leads to a 2.4% increase in demand for petrol
- ☒ **D** A 5% increase in income leads to a 1.85% increase in demand for public transport

(Total for Question 6 = 1 mark)

TOTAL FOR SECTION A = 6 MARKS

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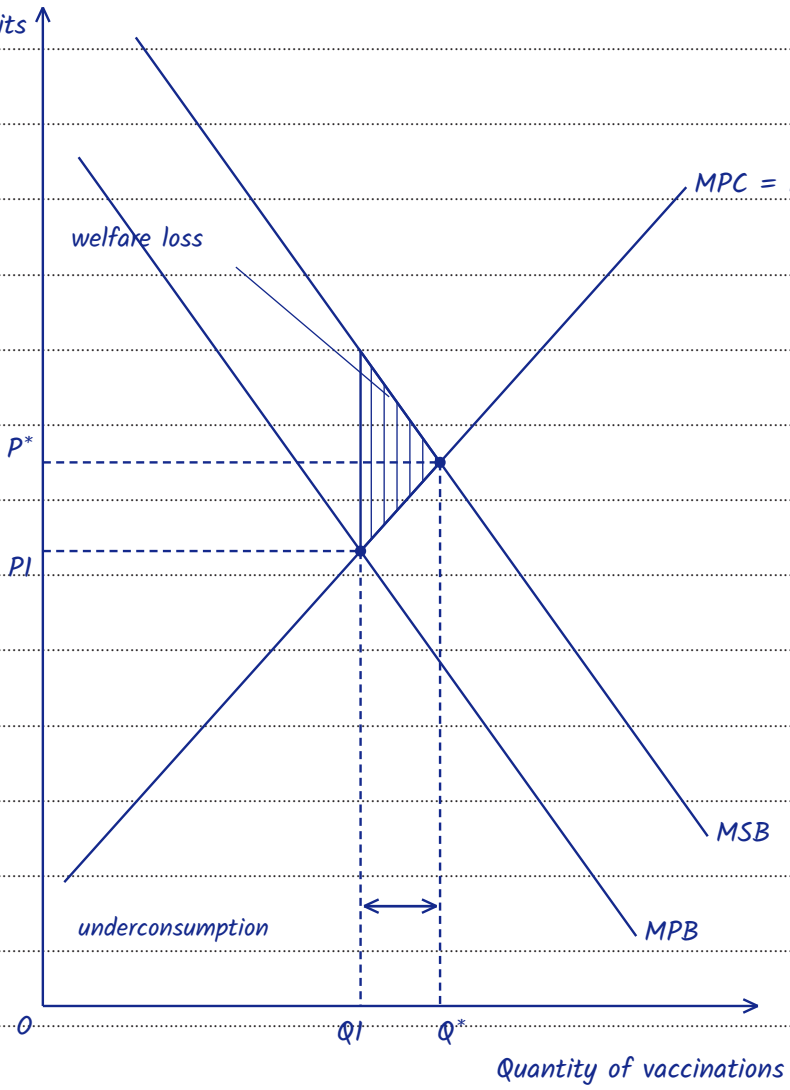
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SECTION B

Answer ALL questions in this section in the space provided.

7 According to the World Health Organization vaccinations prevent more than 2 million deaths each year. However, in 2014 there were 18.7 million infants not receiving any vaccinations.

Draw an externalities diagram to illustrate the underconsumption of vaccinations.



Vaccinations create external benefits (less disease spread to third parties), so MSB lies above MPB. The free market consumes Q1 where MPB = MPC, but the social optimum is Q^* where MSB = MSC. $Q1Q^*$ is the underconsumption, shown by the 18.7 million infants not vaccinated in 2014, and the shaded triangle is the welfare loss.

(Total for Question 7 = 4 marks)

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8 The table shows the amount of greenhouse gas emissions resulting from the production of three meat products.

Meat	Greenhouse gas emissions per kilogram (kg) of meat produced
Beef	60 kg
Lamb	24 kg
Poultry	6 kg

With reference to the table, explain what is meant by 'external costs of production'.

External costs of production are the negative spillover effects of producing a good that fall on third parties who are not involved in the transaction and who are not compensated. They mean that the marginal social cost (MSC) of production is greater than the marginal private cost (MPC) paid by the producer.

For example, producing 1 kg of beef causes 60 kg of greenhouse gas emissions, compared with 24 kg for lamb and only 6 kg for poultry. Farmers do not pay for these emissions, but they contribute to global warming and climate change, which impose costs such as flooding, droughts and damage to crops on third parties around the world.

So beef production has the largest external cost per kg, 10 times that of poultry, and the market price of beef does not reflect the full social cost of producing it.

(Total for Question 8 = 4 marks)

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9 In Oregon, USA, research was conducted in which 10 000 citizens were given health insurance and 45 000 citizens were not. On average, the 10 000 citizens with health insurance had far more hospital admissions and emergency department visits.

Explain why the result of this research is an example of moral hazard.

Moral hazard is when an individual takes more risks, or behaves differently, because they know they are protected against the consequences of that risk and another party (the insurer) will bear the cost of their decisions.

In Oregon the 10 000 citizens who were given health insurance had far more hospital admissions and emergency department visits on average than the 45 000 citizens without insurance.

Once insured, the cost of treatment is transferred from the individual to the insurer, so the price of a hospital visit to the patient falls to close to zero. The insured citizens therefore have less incentive to look after their health or avoid risky activities, and are more willing to use hospital services even for minor problems, because they know they will be covered. This change in behaviour caused by being insured is moral hazard, and it raises the costs paid by the insurer.

(Total for Question 9 = 4 marks)

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10 The cross elasticity of demand for tea with respect to a change in the price of coffee is +0.52. Between March 2019 and March 2020 the price of coffee increased by 32%.

Ceteris paribus, calculate the percentage change in the quantity demanded of tea following the change in the price of coffee. Show your workings.

XED = % change in quantity demanded of tea ÷ % change in price of coffee

+0.52 = % change in quantity demanded of tea ÷ 32%

% change in quantity demanded of tea = 0.52 × 32%

= +16.64%

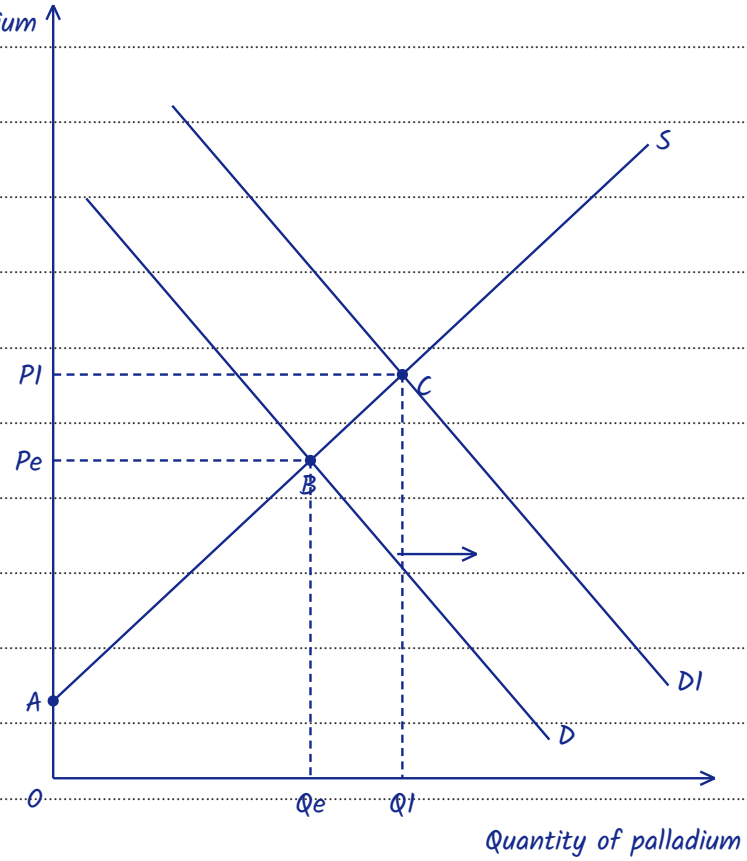
XED is positive, so tea and coffee are substitutes: as coffee becomes 32% more expensive, consumers switch to tea and the quantity demanded of tea increases by 16.64% (about 16.6%).

(Total for Question 10 = 4 marks)

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11 Several car manufacturers were found to have misled consumers about diesel emissions. As a result, many consumers substituted diesel cars that use platinum with petrol cars that use palladium. Consequently, the price of palladium increased by 46% between March 2019 and March 2020.

Explain the effect of this increase in price on producer surplus in the market for palladium. Illustrate your answer with a diagram.



Producer surplus is the difference between the price producers receive and the lowest price they are willing to accept. The switch to petrol cars raises demand for palladium (D to D1), so price rises 46% from Pe to P1. Producer surplus increases from ABPe to ACP1, a gain of PeBCP1, because existing sellers get a higher price and extra units are sold.

(Total for Question 11 = 4 marks)

TOTAL FOR SECTION B = 20 MARKS

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SECTION C BEGINS ON THE NEXT PAGE.

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SECTION C

Study Figure 1 and Extracts A and 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 'renewable resource' (Extract B, line 19).

(2)

(b) Explain what is meant by the term 'rational decision'. Refer to Extract B in your answer.

(4)

(c) Analyse why the global price of oil fell in the first quarter of 2020. Refer to Figure 1 and Extract A in your answer.

Illustrate your answer with a supply and demand diagram.

(6)

(d) With reference to Extract A, examine **two** likely effects of the high level of indirect taxation on diesel and petrol in India.

(8)

(e) With reference to Extract B, discuss the likely microeconomic effects of the subsidy paid to the manufacturers of electric cars.

Illustrate your answer with an appropriate diagram.

(14)

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12 (a) Define the term 'renewable resource' (Extract B, line 19).

(2)

A renewable resource is one that is naturally replenished, so it does not run out or deplete when it is used, for example the hydroelectricity that generates 60% of Canada's electricity.

(b) Explain what is meant by the term 'rational decision'. Refer to Extract B in your answer.

(4)

A rational decision is one where economic agents weigh up costs and benefits to maximise their own benefit: consumers aim to maximise their utility (satisfaction) from their limited income, and firms aim to maximise profit.

In Extract B, indirect taxes are added to the price of a petrol VW Golf, while the $5 000 subsidy paid to manufacturers lowers the price of the electric VW Golf, so the electric version is cheaper. A rational consumer would buy the cheaper electric VW Golf, since it gives the same transport service for less money.

The money saved on the purchase price, and on lower fuel and running costs, can then be spent on other goods and services, so the consumer gains more total utility from the same income.

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(c) Analyse why the global price of oil fell in the first quarter of 2020. Refer to Figure 1 and Extract A in your answer.

Illustrate your answer with a supply and demand diagram.

(6)

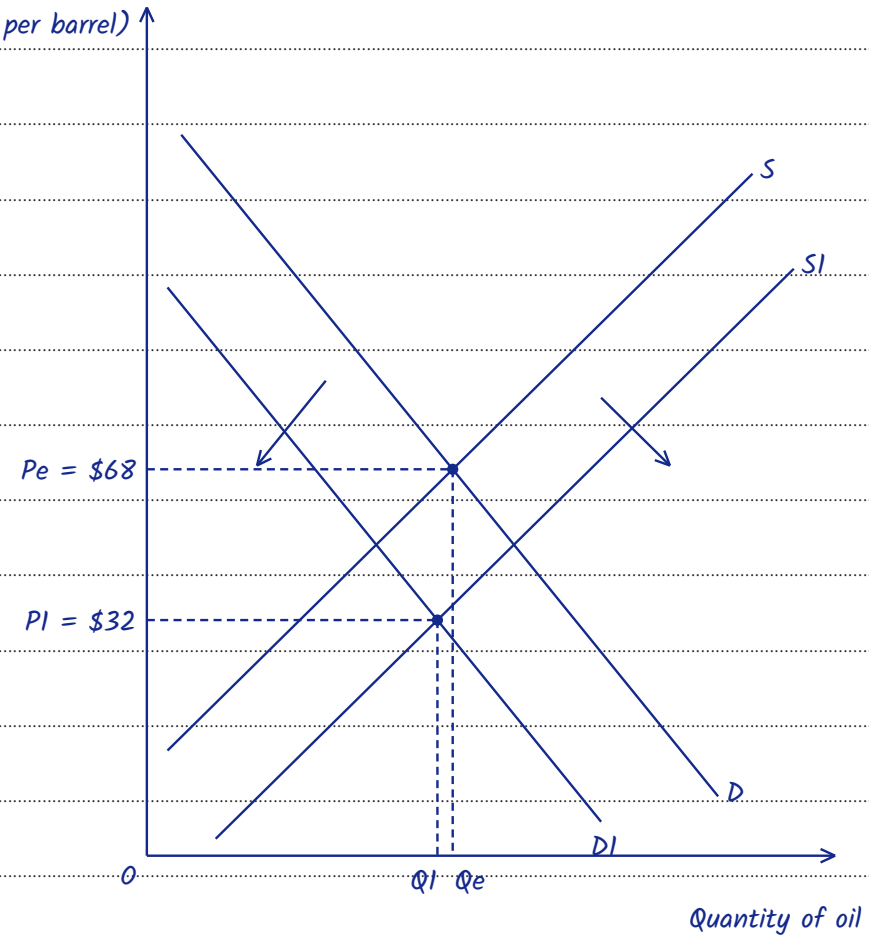


Figure 1 shows the global price of oil fell from about $68 per barrel in January 2020 to about $32 per barrel by the end of the first quarter, a fall of $36 or around 53%.

On the demand side, governments restricted the movement of people and many offices and factories closed, causing a significant reduction in production. With less transport and energy needed, firms and households needed less oil, so demand shifted left from D to D1.

On the supply side, Saudi Arabia planned to cut production to raise the price, but Russia increased its output and Saudi Arabia responded by increasing its own production. This failure to agree on limiting output shifted supply right from S to S1.

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At the original price Pe there is now a large excess supply of oil, so producers cut prices until a new equilibrium is reached at PI. Because both the fall in demand and the rise in supply push the price down, the price fell sharply from Pe ($68) to PI ($32).

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(d) With reference to Extract A, examine **two** likely effects of the high level of indirect taxation on diesel and petrol in India.

(8)

An indirect tax is a tax on expenditure, paid by firms to the government but partly passed on to consumers in a higher price. In India almost half the price of petrol and diesel is indirect tax.

One effect is that the price paid by consumers stays high. The tax raises firms' costs of supply, shifting the supply curve to the left, so consumers pay a higher price and buy a smaller quantity than at the free market equilibrium. Because the tax is a large fixed part of the price, the significant fall in the global oil price only led to a 7% fall in the price of petrol and diesel in India, so consumers gained little from cheaper oil and their consumer surplus is lower.

However, the effect on the quantity consumed is likely to be small. Petrol and diesel have few close substitutes and are necessities for transport, so demand is price inelastic and consumers keep buying almost the same amount; the main effect is on price rather than quantity, which also means the high tax mostly falls on consumers.

A second effect is that the lower consumption reduces external costs, and the government earns large tax revenue. Burning petrol and diesel creates air pollution and carbon emissions that harm third parties. By raising the price, the tax moves output from the market equilibrium towards the social optimum, so the external costs and the welfare loss fall. The revenue, almost half of all spending on fuel, can be used to tackle these external costs, for example by funding public transport.

However, as demand is inelastic, the reduction in pollution may be small, so the tax is more effective at raising revenue than at cutting emissions. A tax this high may also cause government failure through unintended consequences, such as fuel being smuggled from

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neighbouring countries with lower taxes, which reduces the revenue and the benefit. Overall, the most significant effect is likely to be the high price and the revenue raised, rather than a large fall in consumption.

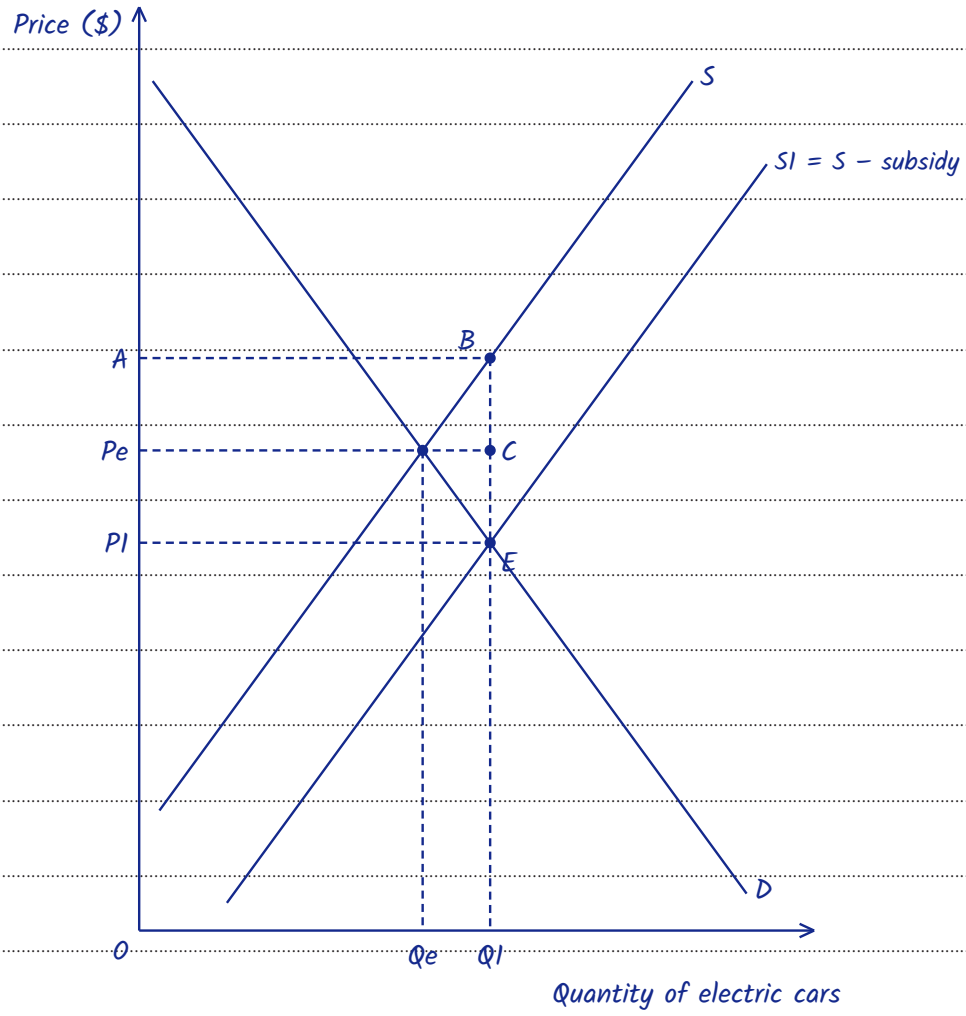
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(e) With reference to Extract B, discuss the likely microeconomic effects of the subsidy paid to the manufacturers of electric cars.

Illustrate your answer with an appropriate diagram.

(14)

A subsidy is a payment from the government to producers to lower their costs of production and encourage output. Canada pays $5 000 per electric car to manufacturers, for cars priced below $45 000.



The subsidy lowers costs, so supply shifts right from S to S1 by $5 000 per car. The price paid by consumers falls from Pe to P1 and the quantity bought rises from Qe to Q1, up from only 2% of cars in 2019. Producers receive P1 plus the subsidy, so the price they receive rises from Pe to A. The total cost to the government is ABEP1, of which PeCEP1 goes to consumers through a lower price and ABCPe goes to producers, so both consumer and producer surplus rise.

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For manufacturers of electric cars, sales revenue and profits rise, which may fund investment in better batteries and more models. Manufacturers of petrol and diesel cars may lose sales, revenue and profit as consumers switch, especially as indirect taxes already make the petrol VW Golf more expensive than the subsidised electric version.

Most importantly, electric cars have zero carbon emissions when driven. Road transport causes 20% of Canada's carbon emissions, so replacing petrol and diesel cars reduces the external costs of driving, such as climate change and air pollution, moving the market closer to the social optimum and reducing the welfare loss from underconsumption of electric cars.

However, the effect may be limited. The subsidy only applies to cars below $45 000 and just nine models qualify, so many buyers are not affected. There are only 5 800 charging points for 37 million people, compared with 176 000 for 5 million in Norway, so lack of infrastructure may stop people switching even at a lower price; the $130 million planned for charging stations will take time to have an impact.

The fall in price also depends on elasticity. If demand is price elastic, most of the subsidy raises quantity; if it is inelastic, more goes to producers as higher revenue rather than to consumers. Electric cars are not a perfect substitute for petrol cars because of range and charging, which limits switching.

The environmental benefit is also smaller than it seems: producing an electric car battery needs twice as much energy as a petrol car battery, and 40% of Canada's electricity is not from hydroelectricity, so some is made from fossil fuels. There is also an opportunity cost, as the subsidy spending could be used on healthcare or education.

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Overall, the $5 000 subsidy is substantial and should raise sales of electric cars and lower emissions in the long run, but its effects will be modest until charging infrastructure is expanded and more models qualify.

(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 Australia a consumer of electricity would save, on average, AUS$1 000 by switching from the most expensive to the least expensive electricity supplier. However, 30% of consumers do not switch because of the effort required and 22% do not switch because they lack the necessary information.

Evaluate possible reasons why consumers may behave irrationally.

(Total for Question 13 = 20 marks)

OR

14 Between Q4 2016 and Q4 2019 the global price of gold increased from $1 275 to $1 481 per ounce. Over the same period, the global supply of gold increased from 888.8 tonnes to 889.5 tonnes. Only 10 countries mine 62% of global output.

Evaluate reasons why the supply of gold is price inelastic.

(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:

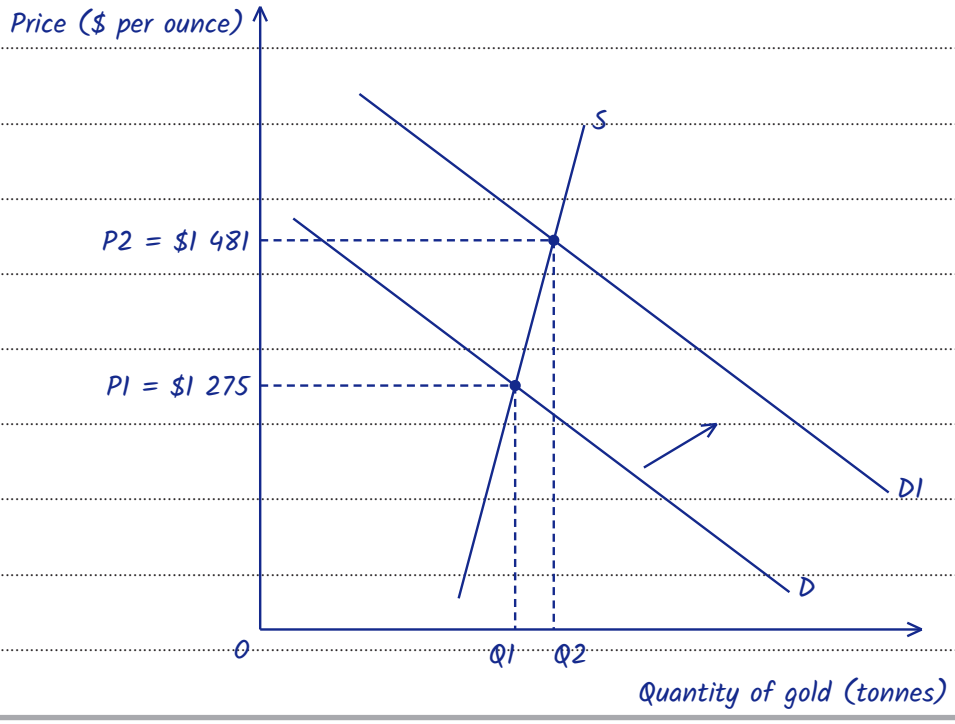
Price elasticity of supply (PES) measures the responsiveness of quantity supplied to a change in price: PES = % change in quantity supplied ÷ % change in price. Supply is price inelastic when PES is between 0 and 1.

% change in price = (1 481 − 1 275) ÷ 1 275 × 100 = 206 ÷ 1 275 × 100 = 16.2%

% change in quantity supplied = (889.5 − 888.8) ÷ 888.8 × 100 = 0.079%

PES = 0.079 ÷ 16.2 = 0.0049

A 16.2% rise in price led to only a 0.7 tonne (0.079%) rise in supply, so supply of gold is extremely price inelastic, close to perfectly inelastic. On the diagram demand rises from D to D1, and because supply is steep the price rises sharply from P1 to P2 while quantity hardly changes from Q1 to Q2.



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The first reason is the time period. Setting up a new gold mine takes many years, because deposits must be found, tested and developed and expensive capital equipment installed. So between 2016 and 2019 most of the response to the higher price could only come from existing mines, and supply could not respond quickly.

Second, there may be little spare capacity. If existing mines are already working at full capacity they cannot raise output much when the price rises. Factors of production are also immobile: skilled miners take time to train, and specialised machinery cannot quickly be switched into gold mining. Legal constraints such as getting permission to open a mine add further delays.

Third, gold is a finite natural resource found in only a few places. Only 10 countries mine 62% of global output, so supply depends on a small number of locations where gold exists, and other countries cannot start producing it however high the price. As the easiest deposits are used up, extra gold becomes harder and more costly to extract.

Fourth, there are high start-up costs and the future price of gold is volatile, so firms are reluctant to invest in new mines on the basis of a price rise that may not last. This further reduces the response of quantity supplied to the higher price.

However, these reasons should be evaluated. The most important is the time period: PES is inelastic in the short run because only some factors can be changed, but in the long run new mines open, capacity expands and supply becomes more elastic. Over a longer period than three years the 16.2% price rise, which is significant in magnitude, may lead to a much larger increase in output.

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The data also has limitations. It compares only two points in time, so we do not know how output and price varied in other years, and the figure assumes ceteris paribus. Supply may have been held back by other factors such as rising mining costs, poor weather or flooding of mines, so the true PES may be higher than 0.0049.

In addition, the supply of gold to the market is not only from mining. Gold does not perish and can be stored and recycled, so stocks held by central banks, investors and jewellery owners can be sold when the price rises. This suggests that the total market supply of gold may be more elastic than mine output alone suggests. New technology could also make it cheaper to reach deeper deposits, making supply more responsive in future.

In conclusion, the supply of gold is price inelastic mainly because of the long time needed to open new mines and the finite, concentrated nature of gold deposits. The PES of 0.0049 shows this is true in the short run, but over time and once stored and recycled gold is included, supply is likely to be less inelastic than the data suggests.

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TOTAL FOR SECTION D = 20 MARKS

TOTAL FOR PAPER = 80 MARKS

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Pearson Edexcel International Advanced Level

Monday 11 January 2021

Afternoon (Time: 1 hour 45 minutes) | Paper Reference **WEC11/01**

Economics

International Advanced Subsidiary
Unit 1: Markets in action

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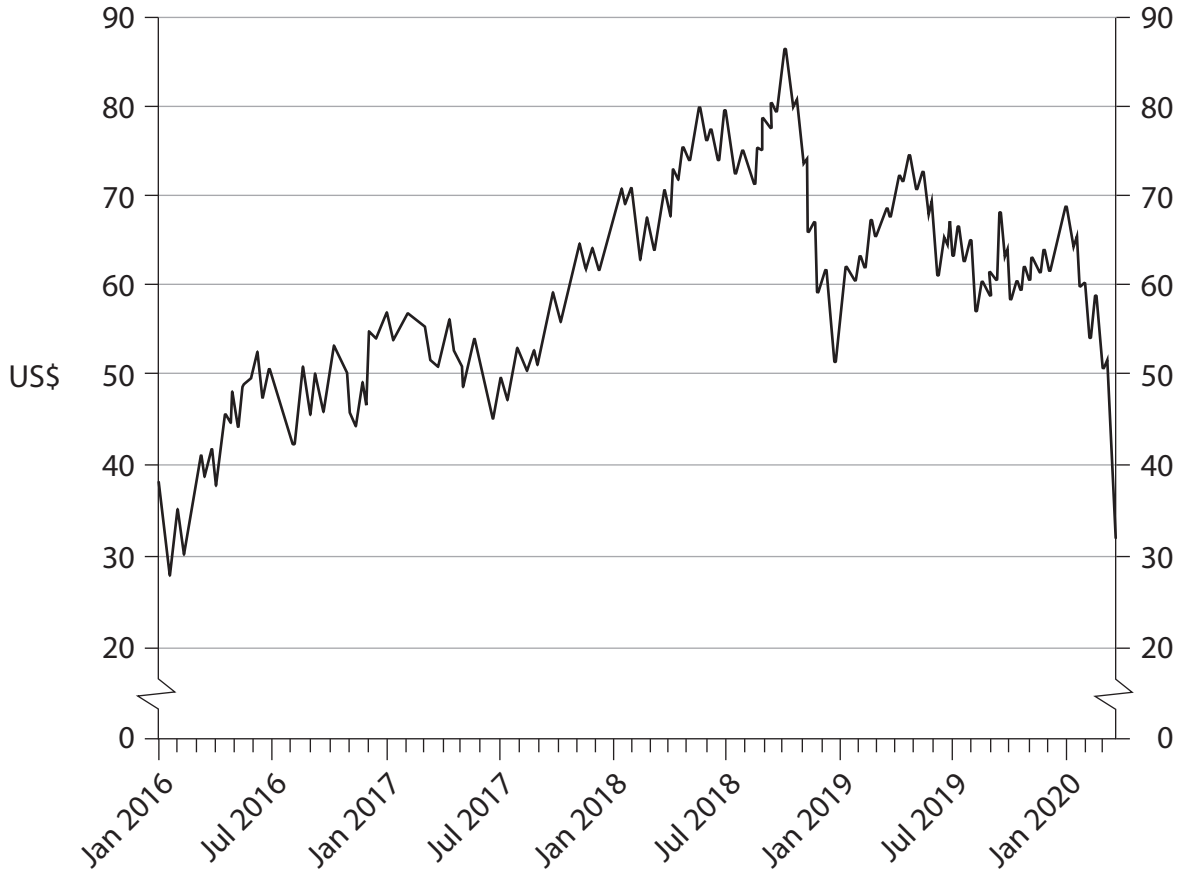
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Sources for use with Section C.

The markets for oil and electric cars

Figure 1 Global price of oil per barrel, US$ 2016–2020



Extract A Oil price fall

The global price of oil fell in the first quarter of 2020 after governments restricted the movement of people. Many offices and factories closed, causing a significant reduction in production. With less transport and energy needed, the demand for oil decreased. Oil producing countries, led by Saudi Arabia, planned to reduce production in order to increase the price of oil. However, Russia increased its production, so Saudi Arabia responded by increasing its production.

In India the significant fall in the global oil price only resulted in a 7% decrease in the price of petrol and diesel. One reason for this is the high level of indirect taxation on petrol and diesel in the country. In India almost half the price of petrol and diesel is in the form of indirect taxation.

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Extract B Canadian electric car subsidy

Road transportation accounts for 20% of Canada's carbon emissions. The Canadian Government aims to remove all petrol and diesel cars by 2040. However, in 2019 only 2% of cars were electric.

In 2019 the government introduced a $5 000 subsidy to encourage electric car sales. This subsidy is paid to the manufacturers of electric cars. This will apply to electric cars with a price below $45 000. There are just nine electric car models available for under $45 000.

Indirect taxes are added to the price of a petrol Volkswagen (VW) Golf. With the subsidy it would be cheaper to buy the electric VW Golf. The rational decision would be to purchase the cheaper electric VW Golf.

A problem is that there are only 5 800 charging points that are accessible to Canada's 37 million population. By comparison, in Norway there are 176 000 charging points for the population of just 5 million. The Canadian Government is planning to spend $130 million to increase the number of charging stations.

Electric cars have zero carbon emissions when being driven. However, to produce an electric car battery requires twice as much energy compared with the production of a petrol or diesel car battery. In addition, the electricity used to power the electric vehicle creates emissions if the electricity is generated using fossil fuels like coal. In Canada 60% of electricity is generated using hydroelectricity, a renewable resource, whereas in Norway it is 96%.

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Acknowledgements

Figure 1 based on data taken from https://www.indexmundi.com/commodities/?commodity=crude-oil&months=240

Extract A adapted from 'Eight days that shook the oil market – and the world', Derek Brower, Anjli Raval and David Sheppard, Financial Times, Mar 13 2020, https://www.ft.com/content/c9c3f8ac-64a4-11ea-a6cd-df28cc3c6a68

Adapted from 'Global crude prices have crashed, but petrol and diesel prices have not; here's why', Sumant Banerji, Mar 12 2020, https://www.businesstoday.in/sectors/energy/global-crude-prices-have-crashed-but-petrol-and-diesel-prices-have-not-heres-why/story/398117.html

Extract B adapted from 'Electric car incentives in Canada — what to know about the rebate that includes Tesla 3', Katie Dangefield, Global News, May 2 2019, https://globalnews.ca/news/5225373/canada-electric-car-rebate-program/

Adapted from 'The truth about the environmental damages from electric cars', 0ct 10 2017 https://www.electriciancourses4u.co.uk/blog/environmental-damages-of-electric-cars/