

AS ECONOMICS

Paper 1 The Operation of Markets and Market Failure

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DO NOT WRITE ANY ANSWERS IN THIS INSERT. YOU MUST ANSWER THE QUESTIONS IN THE ANSWER BOOKLET PROVIDED.

CONTEXT 1: OIL

Questions 21 to 26

- **Extract A:** Brent crude oil prices, 2013–2020 and market shares of leading oil producers, 2019
- **Extract B:** The market for oil
- **Extract C:** Failures in the oil market

CONTEXT 2: DRONES

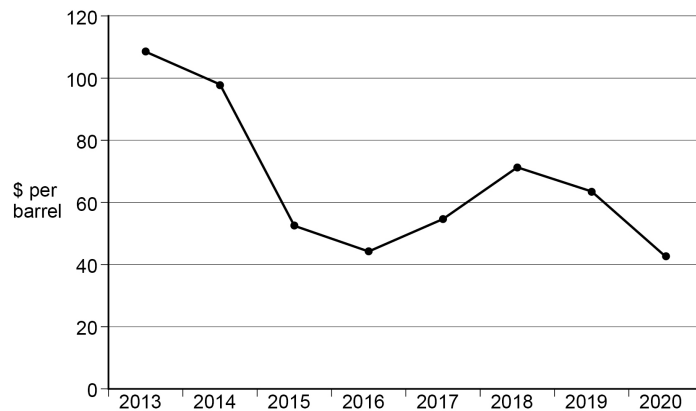
Questions 27 to 32

- **Extract D:** Annual worldwide sales of commercial drones, 2016–2023 and near misses between drones and planes in the UK, 2014–2018
- **Extract E:** The rise of the drone
- **Extract F:** Opportunity or threat?

Context 1

Total for this context: 50 marks

OIL

Extract A: Brent crude oil prices, 2013–2020 and market shares of leading oil producers, 2019**(i) Brent crude oil prices (\$ per barrel), 2013–2020**

Note: Oil prices are the average price for the 12 months of each year.

(ii) Market shares of leading oil producers (%), 2019

Country/group	Market share (%)
Canada	5.9
OPEC	37.4
Russia	12.1
United States	17.9
Others	26.7

Source: World Bank and bp Statistical Review of World Energy 2020

Extract B: The market for oil

Crude oil, a fossil fuel, is a non-renewable resource which plays a vital role in modern economies. Oil is used to make petrol and diesel for cars, planes and machinery. It is also used to make electricity, fertiliser and plastics.

Since the start of 2013, the average monthly price of Brent crude (one of two key oil prices) has varied from \$116.52 in February 2013 to \$23.34 in April 2020. Income and price elasticity of demand for oil are fairly inelastic, particularly in more developed economies. The supply of oil is also inelastic. Like other primary products, the price of oil fluctuates in response to changes in both demand and supply. For example, as more countries industrialise, incomes increase. This causes demand for oil to rise, although it falls during recessions. Oil supplies are sometimes disrupted for political reasons, which also contributes to the large price fluctuations.

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As a natural resource, crude oil is only found in certain locations. In 1960, the Organization of the Petroleum Exporting Countries (OPEC) was set up by five leading oil-producing countries, led by the largest producer, Saudi Arabia. OPEC's aim is to 'coordinate and unify the petroleum policies of its member countries and ensure the stabilisation of oil markets'. It currently has 13 members, accounting for about 40% of oil production and 80% of the world's viable oil reserves. At times, it has used its monopoly power to influence the supply of oil and therefore its price.

15

Source: News reports, December 2020

Extract C: Failures in the oil market

Oil is a finite resource and substitutes will eventually be needed. Technological improvements have made it possible to obtain oil from new locations, adding to supplies. However, oil exploration and extraction are expensive and oil prices need to be high and stable to encourage new ventures. The recent fall in demand and price has led to a surplus of oil and the postponement of several projects. Oil companies and oil-exporting countries are the main losers. In April 2020, OPEC announced cuts in production extending to 2022, to achieve a 'secure supply to consumers, and a fair return on invested capital'.

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Although oil is very important for both consumers and producers, there are environmental concerns, with many governments using tax and regulation to reduce demand. Oil can pollute the air, water and soil and is viewed as a significant contributor to greenhouse gas emissions and global warming. The Paris Agreement of 2015 set a limit for global warming of 'well below 2 °C'. By early 2020, 195 countries had signed the agreement.

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Concerns about the impact of oil on the environment have led to the encouragement of renewable energy, such as solar, wind and tidal power, often using subsidies. However, some countries find it easier to generate power by greener methods than others. Technical progress has cut the cost of renewable sources but when oil prices fell recently, it made them less competitive again. In 2019, the share of renewables in global electricity production rose to 10.4%. The use of electric cars is also increasing but some uses of oil still lack viable substitutes.

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Unstable prices, monopoly power, environmental concerns and a vital resource – should governments intervene more in the oil industry?

20

Source: News reports, December 2020

Turn over for Context 1 questions**Turn over ►**

Context 1 – Questions 21 to 26

- 2 1** Define 'price elasticity of demand' **Extract B** (lines 5–6). **[3 marks]**
- 2 2** **Extract B** (lines 4–5) states: 'the average monthly price of Brent crude (one of two key oil prices) has varied from \$116.52 in February 2013 to \$23.34 in April 2020'.
- Calculate the oil price index for April 2020, if February 2013 is taken to be the starting point (base year) of the oil price index. Give your answer to the **nearest whole number**. **[4 marks]**
- 2 3** Use **Extract A (i)** to identify **two** significant features of the price of Brent crude oil over the period shown. **[4 marks]**
- 2 4** Use the data in **Extract A (ii)** to complete the pie chart to show the market shares of each of the following oil producers in 2019: Canada, OPEC, Russia, the United States and Others. **[4 marks]**
- 2 5** **Extract C** (lines 13–14) states: 'Concerns about the impact of oil on the environment have led to the encouragement of renewable energy, such as solar, wind and tidal power'.
- Explain how the development of renewable sources of energy is likely to affect the market for oil. **[10 marks]**
- 2 6** **Extract C** (lines 20–21) states: 'Unstable prices, monopoly power, environmental concerns and a vital resource – should governments intervene more in the oil industry?'
- Use the extracts and your knowledge of economics to evaluate ways in which governments could deal with the market failures in the oil industry. **[25 marks]**

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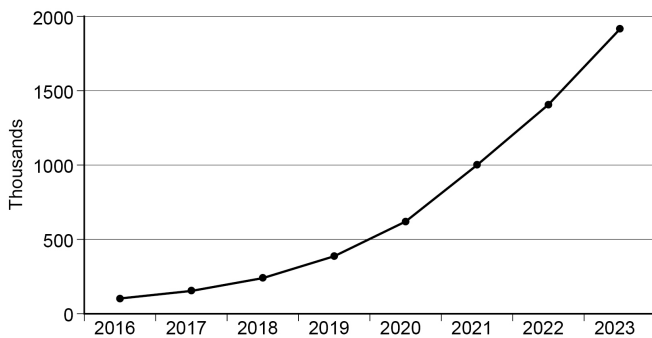
Turn over for Context 2

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Context 2

Total for this context: 50 marks

DRONES

Extract D: Annual worldwide sales of commercial drones, 2016–2023 and near misses between drones and planes in the UK, 2014–2018**(i) Annual worldwide sales of commercial drones, actual and projected, 2016–2023****(ii) Near misses between drones and planes in the UK, 2014–2018**

Year	Near misses
2014	9
2015	29
2016	71
2017	93
2018	125

Source: Statista.com

Extract E: The rise of the drone

A drone or unmanned aerial vehicle (UAV) is a small flying device with no pilot on board but controlled by a computer or smartphone app. It usually carries a camera to take pictures or videos from the air. The use of drones has increased considerably over the last 15 years and is predicted to grow rapidly as technological developments enable them to be used for a wider variety of purposes.

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The current civilian drones have benefited from considerable research and development over time for their use in military operations. They are now widely used by businesses and for leisure purposes, as well as by governments. Drones can reach remote areas quickly and easily, saving on labour and other costs. Their uses include: in agriculture, to manage crops and animals; in construction, for inspecting buildings and infrastructure; for weather predictions; and to help deal with natural or other disasters.

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Drones are increasingly being used to deliver goods. For example, Amazon has been experimenting with using drones to deliver packages over short distances.

Source: News reports, December 2020

Extract F: Opportunity or threat?

Although there is the initial cost of the equipment, drones increase productivity. This reduces the need for other factors of production, and so reduces total costs. Drones therefore help firms gain a competitive advantage, adding to profits.

Drones can also help humanitarian organisations carry out their work more effectively. One important application is healthcare. In 2016, Rwanda became the first country to use drones to deliver blood and medical supplies to remote areas. In the next three years, more than 10 000 packages were delivered. Drones have recently been trialled to deliver medical and other supplies to islands off the west coast of Scotland. 5

One UK firm has developed drones to carry food and water to areas suffering from war or natural disasters. The total cost of a delivery consists of £150 for the drone and another £350 to carry out the whole operation. The drone carries food weighing 110 pounds (50 kilos), enough for 50 people for a day. 10

Could drones be another example of technical progress improving the lives of many and enabling a wide variety of businesses to work more efficiently? They are, however, not without their critics. Their external costs must be considered. In December 2018, a thousand flights were cancelled when drones were seen flying near Gatwick airport. This cost the industry an estimated £50 million. With more machines in the air, the number of near misses with planes is increasing. There are also concerns about what the drones are photographing and the buzzing noise they make. 15

Regulations vary, and in some countries, drone flying is banned. In 2016, the UK Civil Aviation Authority (CAA) issued new laws and guidelines. This 'Dronecode' lays down what you can and cannot do, with operators required to take an online test for larger drones and fines for misuse. The UK laws are now in line with many other countries but if drones become more common, another review may be needed of what is best for all. 20

Source: News reports, December 2020

Turn over for Context 2 questions

Turn over ►

Context 2 – Questions 27 to 32

2 7

Define 'factors of production' **Extract F** (line 2).

[3 marks]

2 8

Extract F (lines 10–12) states: 'The total cost of a delivery consists of £150 for the drone and another £350 to carry out the whole operation. The drone carries food weighing 110 pounds (50 kilos), enough for 50 people for a day.'

Calculate the average total cost of delivering food weighing one pound. Give your answer to the **nearest penny**.

[4 marks]

2 9

Use **Extract D (i)** to identify **two** significant features of the worldwide sales of commercial drones over the period shown.

[4 marks]

3 0

Use the data in **Extract D (ii)** to draw a bar chart to show the number of near misses between drones and planes in the UK for the years 2014, 2016 and 2018.

[4 marks]

3 1

Extract E (lines 8–9) states: 'Drones can reach remote areas quickly and easily, saving on labour and other costs.'

Explain how the increasing use of drones is likely to affect the market for delivery workers.

[10 marks]

3 2

Extract F (lines 23–24) states: 'if drones become more common, another review may be needed of what is best for all'.

Use the extracts and your knowledge of economics to assess whether governments should encourage, discourage or do nothing more to affect the use of drones.

[25 marks]

END OF QUESTIONS

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