Surname	Centre Number	Candidate Number
First name(s)		2

GCE A LEVEL

Z22-1520U30-1

1520U30-1

MONDAY, 23 MAY 2022 – AFTERNOON

ECONOMICS – A2 unit 3
Exploring Economic Behaviour

2 hours

	For Examiner's use only		
	Question	**Maximum Mark**	**Mark Awarded**
Section A	**1**	**5**	
	2	**6**	
	3	**9**	
	4	**12**	
	5	**8**	
Section B	**6**	**12**	
	7	**16**	
	8	**12**	
	Total	**80**	

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ADDITIONAL MATERIALS

In addition to this paper you may require a calculator and a ruler.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

You may use a pencil for graphs and diagrams only.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided in this booklet. If you run out of space, use the additional page(s) at the back of the booklet, taking care to number the question(s) correctly.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question.

You are reminded of the necessity for good English and orderly presentation in your answers.

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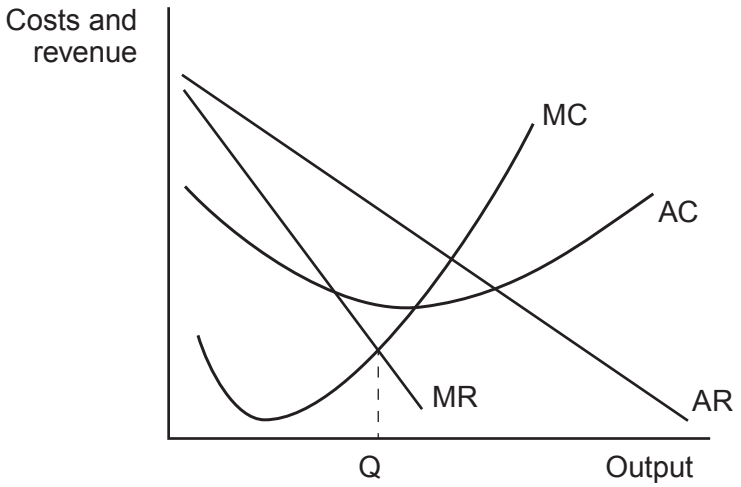
SECTION A

Answer **all** questions in the spaces provided.

1. The diagram below represents a profit maximising firm.



(a) Outline why output level Q is the profit maximising level of output. [2]

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(b) Adapt the diagram to show the change in output if the firm's variable costs increase. [3]

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2. Norwegian Airlines is a low-cost airline, which has operated across Europe since 2002. In 2013, Norwegian Airlines expanded into operating on transatlantic routes between Europe and North America. To continue its growth and achieve economies of scale, Norwegian Airlines has had to significantly reduce ticket prices. This resulted in it making large losses of 229 m Krone (Norway's currency) in 2017 compared with a profit of 1.14 bn Krone the previous year. The falling profitability has attracted interest from IAG (an airline group that includes British Airways) who are keen to merge with Norwegian Airlines and expand into low-cost routes. However, competition authorities are concerned because this could potentially cause fares to rise and choice to fall.

Profit for Norwegian Airlines in 2016 and 2017 (Krone)

2016	2017
1.14 bn	−229 m

Adapted from https://www.economist.com/business/2018/04/19/a-potential-merger-between-iag-and-norwegian-should-worry-flyers

Using the data, evaluate **one** likely benefit for Norwegian Airlines of a merger with IAG. [6]

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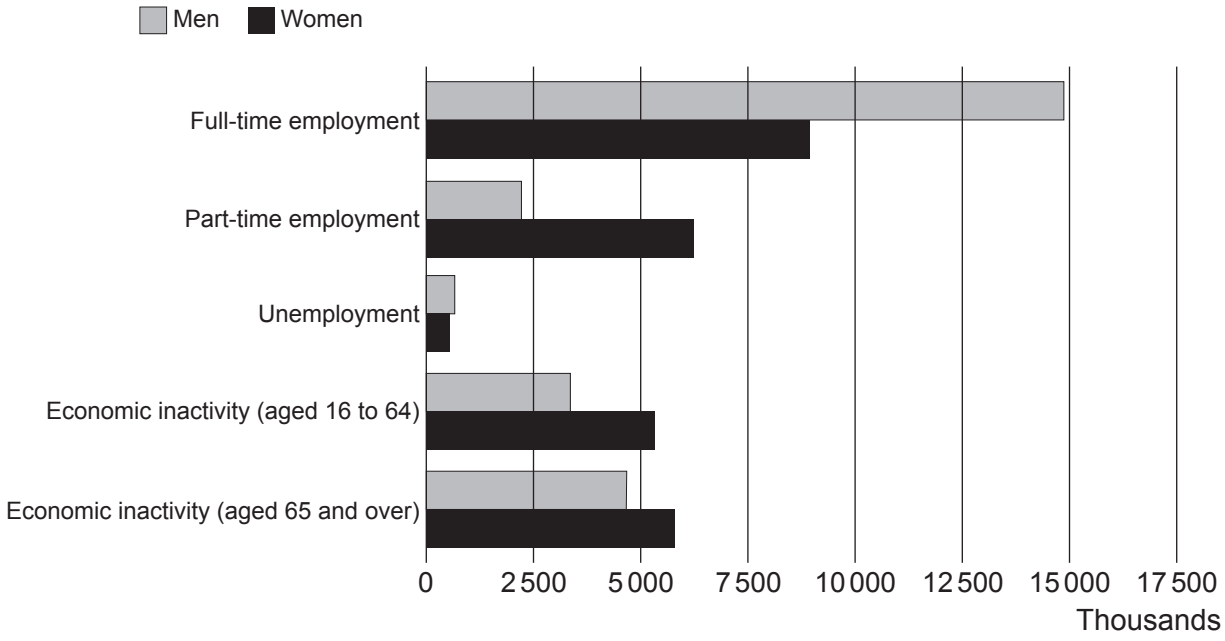
3. Study the data below, taken from the UK's Labour Force Survey in summer 2018.

Key Labour Market Statistics, UK 2018



(a) Evaluate the effectiveness of measuring UK unemployment using the Labour Force Survey method. [5]

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(b) With reference to the data, explain **one** possible supply side approach that could increase employment in the UK. [4]

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4. The data below is taken from the UK's Balance of Payments account. All figures are given in £millions.

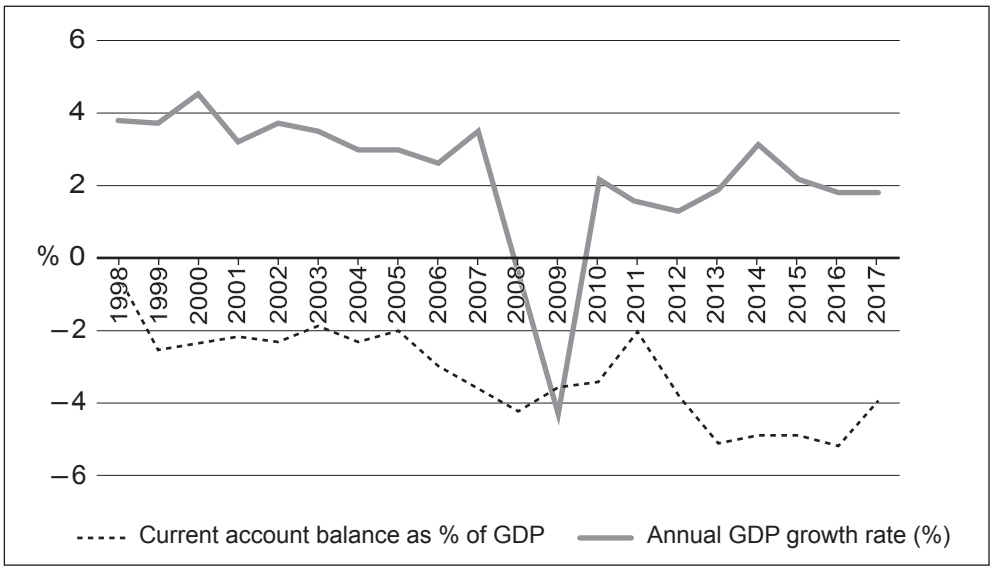
Figure 1: Summary of the 2017 UK Balance of Payments

Current Account Balance	Capital Account Balance	Financial Account Balance	Net Errors and Omissions
−78 959	−1 814	60 460	

Figure 2: The value of exports and imports for selected UK industries (2017)

Industry / Sector	Value of Exports	Value of Imports
Travel	39 791	55 500
Motor vehicles	34 300	48 000
Financial services	59 624	15 256
Telecommunications	20 189	11 524

Figure 3: UK current account balance as a % of GDP and annual GDP growth rate (1998–2017)



(a) Using the information in **Figure 1**, calculate the value of Net Errors and Omissions. Show your workings. [2]

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(b) Using **Figure 2** and **Figure 3**, discuss the extent to which the UK has a structural current account deficit, rather than a cyclical current account deficit. [10]

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5. The charts below provide data relating to an economy during the period 2013–2018.

Chart 1: Annual inflation rate (%)

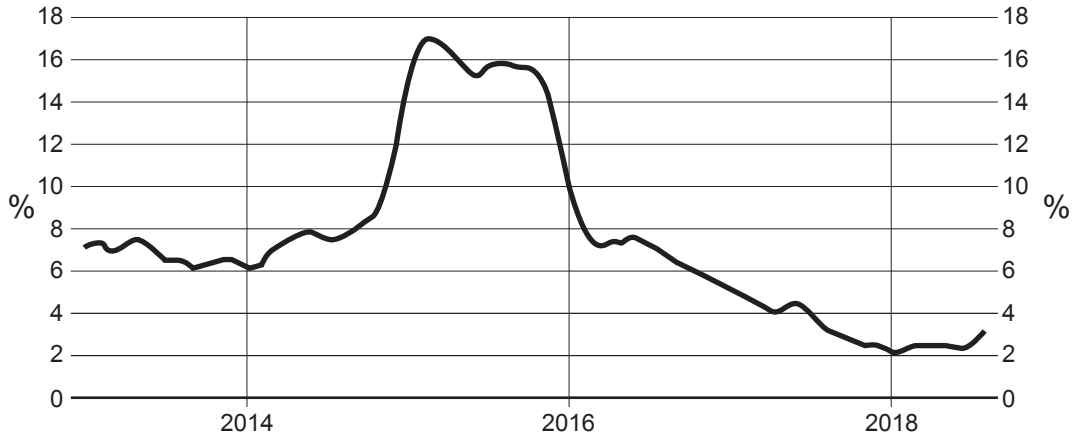
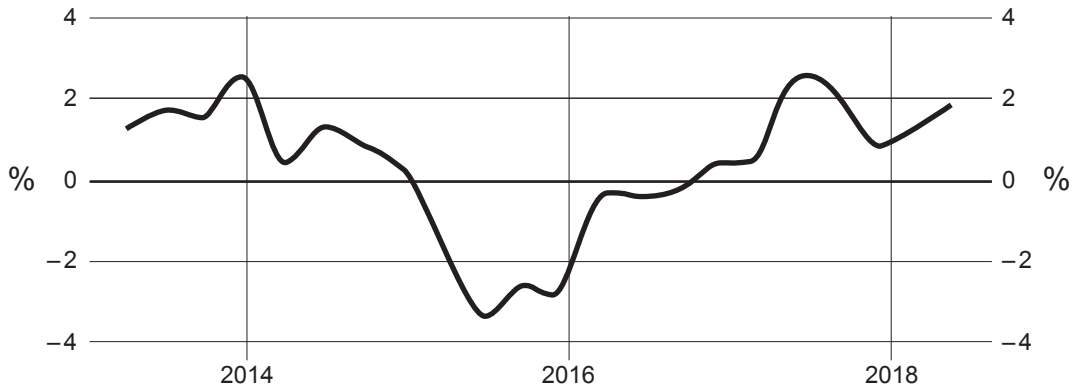


Chart 2: Annual growth rate (%)



Using the data, discuss the view that demand-pull factors were the main cause of inflation in this economy during the period shown. [8]

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SECTION B

Answer **all** questions in the spaces provided.

The rare-earth metal market

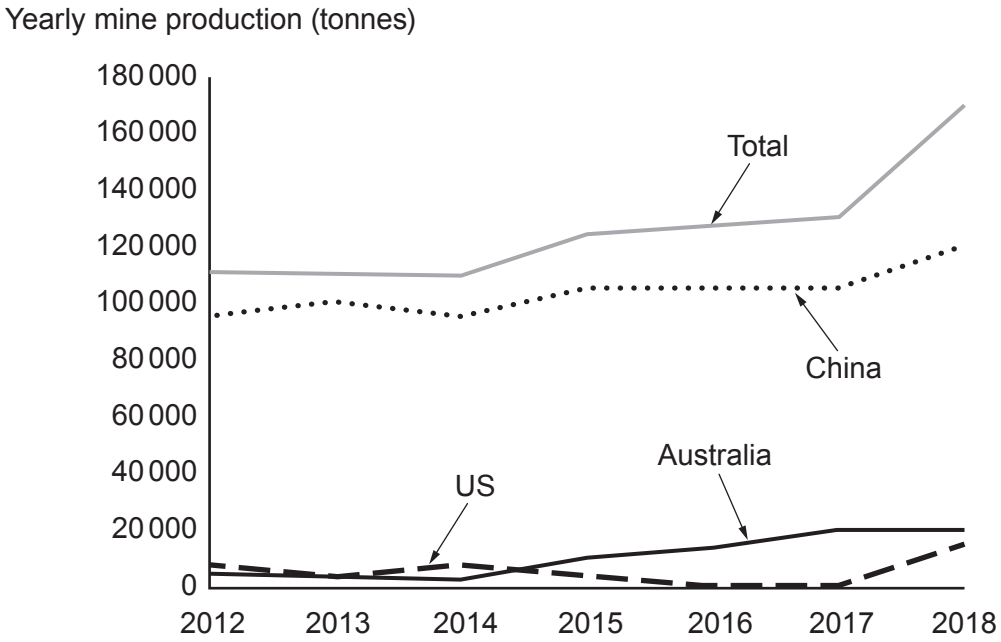
Rare-earth metals are found all over the world but are not concentrated in one place, making it difficult to mine them. They are called 'rare' because they are not easy to extract from the ground.

Rare-earth metals are used in many modern technologies, such as touchscreens, computer networks, and clean energy generation. These rare-earth metals allow many of our gadgets to be small, lightweight, durable and energy efficient. A range of uses for rare-earth metals is shown in **Figure 1**. During the 1990s, rare-earth metals were being mined in a number of countries, including the US, China, Australia, Malaysia, India and Brazil. However, by 2019, China dominated the rare-earth metal market, accounting for the majority of all rare-earth metal mining and processing. **Figure 2** provides more information.

Figure 1: Selected rare-earth metals and their uses

Yttrium	Lasers, TV and computer displays
Lanthanum	Oil refining process and batteries for electric/hybrid cars
Cerium	Oil refining process and production of glass lenses
Neodymium	Computer hard drives and smartphones
Gadolinium	Cancer therapy
Terbium	Electronics and sonar systems
Thulium	X-ray machines
Ytterbium	Portable X-ray machines and laser lighting
Lutetium	LED lightbulbs

Figure 2: Rare-earth metal production by area



Source: US Geological Survey

Figure 3: Prices of selected rare-earth metals (US$ per kg)

Rare-earth metal	2014 price	2018 price	2022 price*
Neodymium	71	108	105
Terbium	788	868	556

* = forecast price

The Chinese Government partly owns many of the firms operating in the Chinese rare-earth metal market. In 2010, it intervened in the market and forced prices higher by imposing significant export quotas and export tariffs on rare-earth metal exports to Japan, the US and Europe. The World Trade Organization (WTO) took action against China on the basis that the intervention amounted to excessive protection of domestic users of rare-earth metals. In 2014, the WTO ordered China to remove its export restrictions. However, the Chinese Government may have removed its export restrictions without WTO intervention because of the market response: the increase in rare-earth metal prices prompted a rapid increase in illegal rare-earth metal mining in China, as well as encouraging global consumers of rare-earth metals to find alternatives.

Given the importance of rare-earth metals for living standards and economic growth, governments around the world began to consider how to protect themselves against future Chinese intervention into this market. The US Government decided in 2019, during the US-China trade war, that it was a priority for US national security to eliminate the country's dependence on Chinese rare-earth metals. A number of governments are now funding rare-earth metal mining and development projects. However, there is a risk that any increase in supply would cause rare-earth metal prices to fall sharply, leading to large losses in revenue for rare-earth metal mining and processing companies, making any further developments in this market unprofitable.

Some commentators have suggested that it would be more beneficial to invest in research to find alternatives to rare-earth metals as well as improving recycling of goods that contain them, such as smartphones. For example, after the 2010 restrictions, glass manufacturers started to use alternative glass-polishing chemicals rather than the rare-earth metal cerium. Magnet makers learned how to recycle magnets and re-use the rare-earth metals, rather than using freshly-mined metals.

An economist at the University of Western Australia has said that there is no need to be concerned about China introducing future trade restrictions, arguing that the only way that such restrictions would have any impact would be:

- if demand for rare-earth metals was highly price inelastic,
- if China had a strong monopoly on supply,
- if China had the 'institutional capacity' to impose strong trade restrictions.

The environmental impact of rare-earth metals

The extraction process for rare-earth metals is complex and toxic. In China, both state-owned mining companies and private companies have used poisonous chemicals to extract rare-earth metals from the ground, resulting in polluted water and serious health problems for local residents. A report from the Los Angeles Times newspaper noted that *"as long as supply chain decisions are driven by prices regardless of environmental costs or geopolitical risks, China will continue to dominate rare-earth mining"*. A spokesperson for Technology Metals Research has said that he believes the Chinese Government is not deliberately trying to interfere with global supply of rare-earth metals and cannot be seen as responsible for the environmental damage; instead, he says, *"the market has done this to itself by saying that we're going to go for the lowest cost at any cost"*.

A Chinese environmentalist, Ma Jun, is concerned that as governments of developed countries try to find more rare-earth metal suppliers outside of China, then other, poor regions of the world could also suffer environmental damage. In addition, a Chinese Government spokesperson said *"as these technology companies have benefitted from using our rare-earth resources, they should bear a part of the responsibility and join the process of cleaning up the environment…we have made huge sacrifices to extract the resources they need"*.

Sources: https://www.latimes.com, https://e360.yale.edu, https://www.bbc.co.uk, https://www.statista.com https://www.scientificamerican.com, https://www.ussc.edu.au, https://www.reuters.com, https://www.americangeosciences.org

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6. (a) With reference to **Figure 3**, and taking 2014 as the base year, calculate an index number to represent:

(i) the price of neodymium in 2022, [1]

(ii) the price of terbium in 2022. [1]

(b) Evaluate the extent to which China has monopoly power over the supply of rare-earth metals. [10]

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7. (a) Outline the role of the World Trade Organization. [2]

(b) With reference to the data, distinguish between absolute advantage and comparative advantage. [4]

(c) Discuss whether the World Trade Organization's action against China was justified. [10]

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8. Discuss how the mining of rare-earth metals impacts on global levels of development. [12]

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END OF PAPER

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Question number	Additional page, if required. Write the question number(s) in the left-hand margin.

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