Please check the examination details below before entering your candidate information

Candidate surname: StemUp Model Solution

Other names:

Centre Number

Candidate Number

# Pearson Edexcel International Advanced Level

## Thursday 9 May 2024

Afternoon (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 has an opportunity cost of zero?

- ☒ **A** An economic good
- ☒ **B** A free good
- ☒ **C** A public good
- ☒ **D** A capital good

**(Total for Question 1 = 1 mark)**

**2** In 2021 the UK's tradeable pollution permits scheme issued 4.4 million permits to airline companies. However, the industry only required 3.3 million permits.

Which **one** of the following is the likely result of supplying this number of permits?

- ☒ **A** The market price of permits will decrease
- ☒ **B** The market price of permits will increase
- ☒ **C** Airline companies will leave the market as a result of increased costs
- ☒ **D** Airline companies will have more incentive to invest in cleaner technology

**(Total for Question 2 = 1 mark)**

**3** In North America the cross elasticity of demand for coffee with respect to a change in the price of milk was estimated to be –0.04.

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

- ☒ **A** Coffee and milk are inferior goods
- ☒ **B** Coffee and milk are substitute goods
- ☒ **C** Coffee and milk are unrelated goods
- ☒ **D** Coffee and milk are complementary goods

**(Total for Question 3 = 1 mark)**

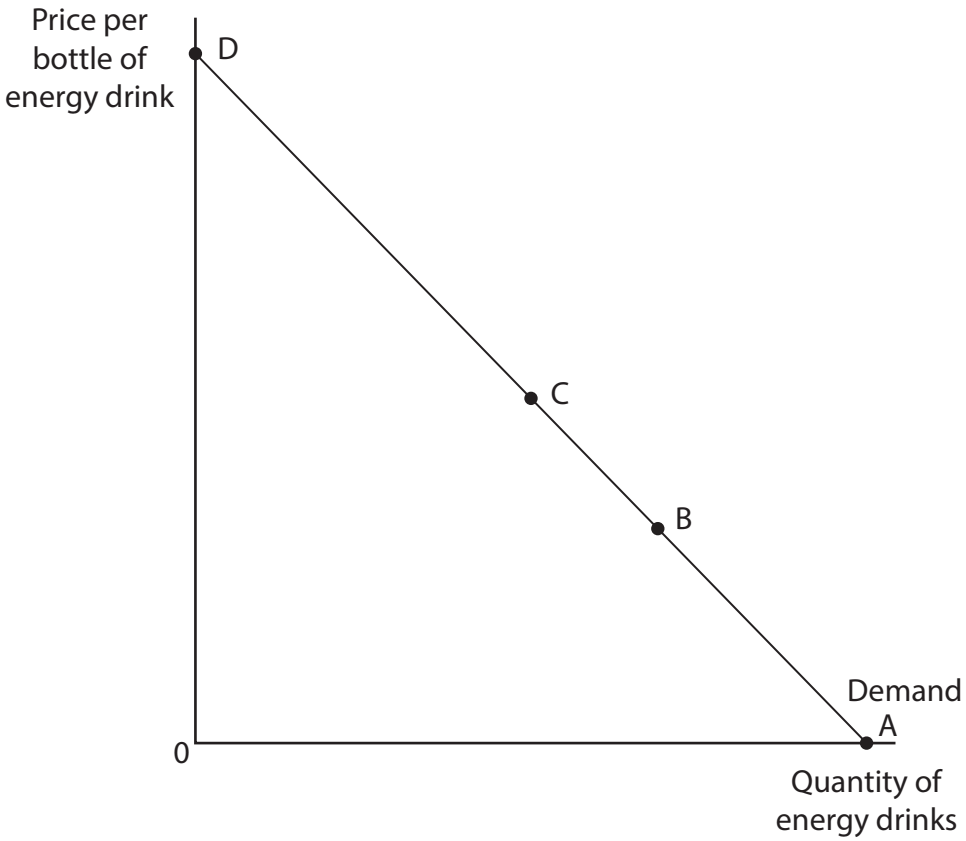
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**4** The diagram shows the demand curve for bottled energy drinks.




Which **one** of the following points has the value of –1 for price elasticity of demand?

- ☒ **A**
- ☒ **B**
- ☒ **C**
- ☒ **D**

**(Total for Question 4 = 1 mark)**

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**5** The table shows the proportion of electricity generated from different sources for Denmark in 2010 and 2021.

| | Coal | Oil | Natural gas | Hydro | Wind | Solar | Other renewables |
|---|---|---|---|---|---|---|---|
| 2010 | 43.8% | 2.0% | 20.3% | 0.1% | 20.1% | 0.0% | 13.7% |
| 2021 | 13.2% | 0.8% | 4.6% | 0.0% | 48.6% | 4.0% | 28.8% |

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

☒ **A** Most electricity was generated by renewable resources in 2010 and by non-renewable resources in 2021

☒ **B** Most electricity was generated by non-renewable resources in 2010 and by renewable resources in 2021

☒ **C** In 2010 66.1% of electricity was generated using renewable resources

☒ **D** In 2021 81.4% of electricity was generated using non-renewable resources

**(Total for Question 5 = 1 mark)**

**6** In 2022 average house prices in China decreased by 2.1%. Research into the housing market in China estimated that the price elasticity of supply for new houses was 2.8.

*Ceteris paribus*, which **one** of the following can be deduced from this information?

☒ **A** The supply of new houses would decrease by 5.88%

☒ **B** The supply of new houses would increase by 5.88%

☒ **C** The supply of new houses would increase by 1.33%

☒ **D** The supply of new houses would decrease by 1.33%

**(Total for Question 6 = 1 mark)**

**TOTAL FOR SECTION A = 6 MARKS**

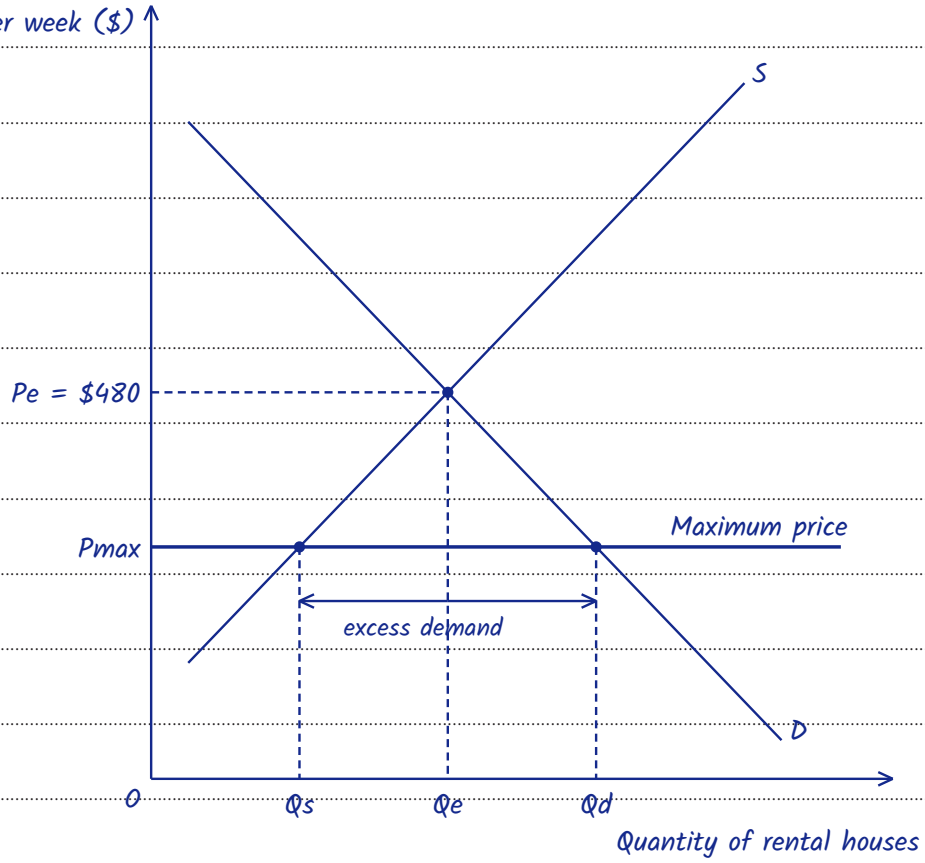
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## SECTION B

**Answer ALL questions in this section in the spaces provided.**

**7** In 2022 the average price of renting a house increased by 14.6% to $480 per week in Brisbane, Australia. There is pressure on the Australian Government to decrease rents by introducing a maximum price.

With reference to the house rental market in Brisbane, draw a diagram to illustrate the introduction of a maximum price for renting a house.




The maximum rent is set below the equilibrium rent of $480 per week, so landlords only supply Qs houses but tenants demand Qd houses. This creates a shortage (excess demand) of Qd – Qs rental houses in Brisbane.

**(Total for Question 7 = 4 marks)**

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**8** Many hotels offer an all-you-can-eat breakfast buffet. 80% of hotel guests go to the breakfast buffet three times for food but only 10% visit five times.

With reference to hotel breakfasts, explain why the above information illustrates 'diminishing marginal utility'.

*Diminishing marginal utility means that as a consumer consumes additional units of a good, the extra satisfaction (marginal utility) gained from each extra unit falls, so total utility rises but at a slower and slower rate.*

*At the buffet 80% of guests go up for food three times, but only 10% go up five times. The first plate gives a hungry guest a large gain in utility, but each extra plate adds less satisfaction because the guest is becoming full. The fourth plate still increases total utility, but by less than the third plate did.*

*Because the breakfast is all-you-can-eat, an extra plate has a zero price, so guests keep eating until marginal utility falls to about zero. By the fifth plate 90% of guests are satiated, so the marginal utility of a fifth plate is zero (or negative) and they do not go back for it.*

**(Total for Question 8 = 4 marks)**

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**9** In 2022 there were 24 300 lighthouses globally. Between 2013 and 2022 the number of losses of ships at sea fell from 109 to 38.

With reference to lighthouses, explain the difference between 'non-rivalry' and 'non-excludability'.

*Non-rivalry means that consumption of a good by one person does not reduce the amount available to, or the benefit received by, other people. When one ship uses the light from a lighthouse to avoid rocks, there is just as much light left for every other ship nearby, so the marginal cost of an extra ship using it is zero.*

*Non-excludability means it is impossible (or too costly) to stop people who have not paid from consuming the good. Once a lighthouse is lit, every ship within sight benefits whether or not it has paid, so there is a free rider problem.*

*So the difference is that non-rivalry is about whether one ship's use reduces what is left for others, while non-excludability is about whether non-payers can be prevented from using it. Because the 24 300 lighthouses have both features they are public goods, which helps explain why ship losses fell from 109 to 38, yet a private firm could not charge for them, so they are usually provided by the government.*

**(Total for Question 9 = 4 marks)**

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**10** The table shows the number of new car sales and the average annual earnings per person in China for 2021 and 2022.

| Year | Number of new car sales | Average annual earnings per person |
|---|---|---|
| 2021 | 21.52 m | ¥106 837 |
| 2022 | 23.56 m | ¥114 029 |

*Ceteris paribus*, calculate the income elasticity of demand for new cars.
Show your workings.

*Income elasticity of demand (YED) = % change in quantity demanded ÷ % change in income*

*% change in quantity demanded = (23.56m − 21.52m) ÷ 21.52m × 100*

*= 2.04 ÷ 21.52 × 100 = 9.48%*

*% change in income = (¥114 029 − ¥106 837) ÷ ¥106 837 × 100*

*= 7 192 ÷ 106 837 × 100 = 6.73%*

*YED = 9.48 ÷ 6.73 = +1.41 (2 d.p.)*

*YED is positive and greater than 1, so new cars in China are a normal, luxury good: demand is income elastic, rising more than proportionately as incomes rise.*

**(Total for Question 10 = 4 marks)**

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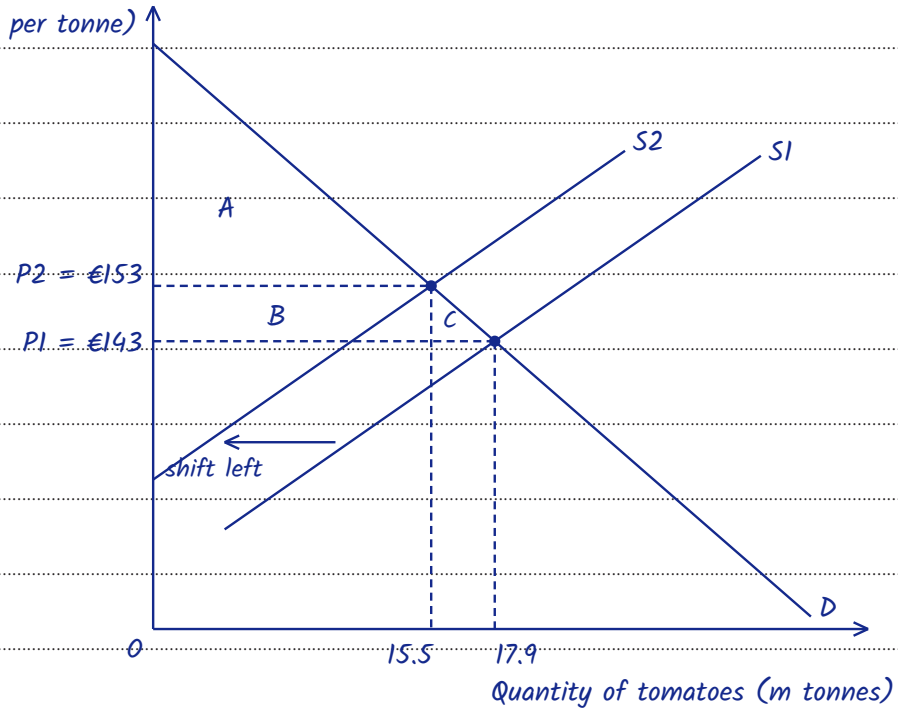
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**11** Between 2021 and 2022 the production of tomatoes in the EU decreased from 17.9 million tonnes to 15.5 million tonnes. The average price of tomatoes in the EU increased from €143 per tonne to €153 per tonne.

*Ceteris paribus*, explain the likely impact of this change in supply on consumer surplus in the tomato market.

Illustrate your answer with a supply and demand diagram.

*Consumer surplus is the difference between the price consumers are willing to pay for a good and the price they actually pay (the area below the demand curve and above the market price).*




*The fall in EU production from 17.9m to 15.5m tonnes is a leftward shift in supply from S1 to S2. At €143 there is now excess demand, so the price rises to €153 per tonne and quantity falls. Consumer surplus falls from area A + B + C to area A only: area B is lost because consumers now pay €10 more per tonne for the tomatoes they still buy, and area C is lost because 2.4m fewer tonnes are bought.*

**(Total for Question 11 = 4 marks)**

**TOTAL FOR SECTION B = 20 MARKS**

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## SECTION C

**Study Figures 1 and 2 and Extracts A, B and C in the Source Booklet before answering Question 12.**

**Write your answers in the spaces provided on the following pages.**

**12** (a) Define the term 'capital goods'. (Extract C, line 5)

**(2)**

(b) With reference to Figure 1 and Extract A, analyse **two** reasons why the price of rice increased between July 2022 and July 2023.

Illustrate your answer with a supply and demand diagram.

**(6)**

(c) With reference to Figure 2, explain whether demand for **each** of the four selected food groups is price elastic or price inelastic.

**(4)**

(d) With reference to Extract B, examine **two** external costs associated with rice production.

**(8)**

(e) With reference to Extract C, discuss the benefits of subsidies paid to rice growers.

Illustrate your answer with an appropriate diagram.

**(14)**

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**12** (a) Define the term 'capital goods'. (Extract C, line 5)

**(2)**

*Capital goods are man-made aids to production, such as machinery, tractors, irrigation equipment and buildings, that are used to produce other goods and services rather than being consumed. For example, Indian rice farmers use subsidies to invest in capital goods.*

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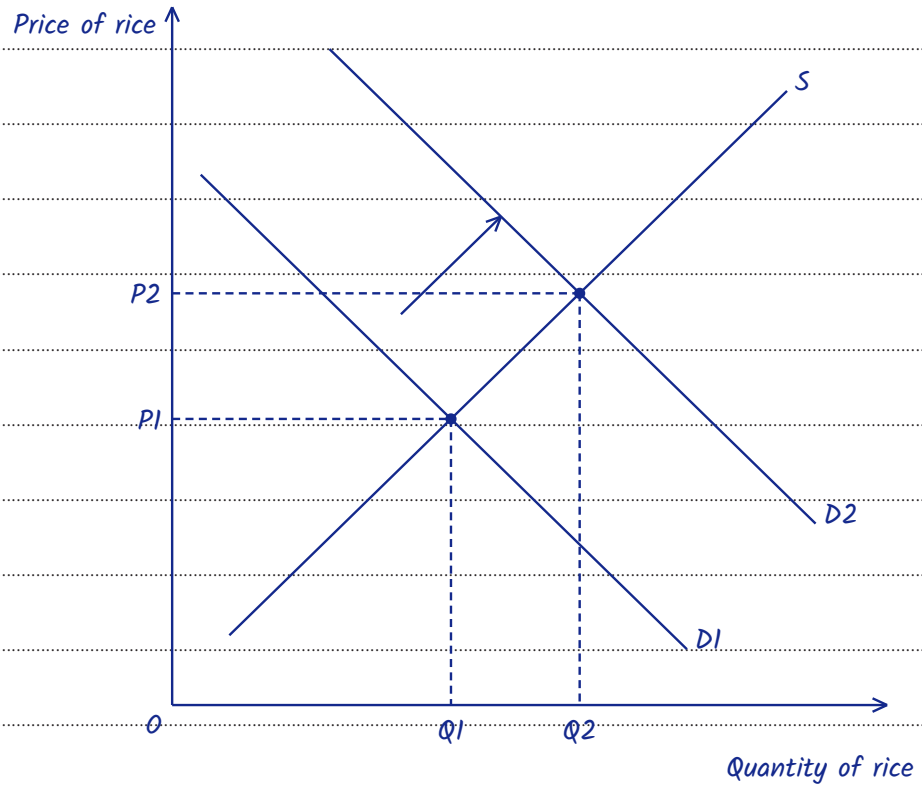
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(b) With reference to Figure 1 and Extract A, analyse **two** reasons why the price of rice increased between July 2022 and July 2023.

Illustrate your answer with a supply and demand diagram.

**(6)**

*Figure 1 shows the world price index for rice rose from 108.4 in July 2022 to 129.7 in July 2023, an increase of 21.3 index points, or over 19.6%. This was mainly caused by an increase in demand, shifting the demand curve to the right from D1 to D2.*




*Firstly, population growth. Rice is a staple food in Africa and Asia and in 2022 the population grew by 2.45% in Africa and 0.83% in Asia, compared with only 0.06% in Europe. More people means more consumers who need rice, so demand for rice increases at every price. With supply unchanged, there is excess demand at P1, so the price is bid up to P2 and quantity rises from Q1 to Q2.*

*Secondly, rising real incomes. In 2022 real incomes grew by about 4% in Asia and 3.85% in Africa. For many lower-income households rice is a normal good, so as real incomes rise they*

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can afford to buy more rice, which again shifts demand to the right from D1 to D2. Because rice supply is fairly price inelastic in the short run (it takes a growing season to plant more), the increase in demand causes a large rise in price, as shown by the 19.6% rise in Figure 1.

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(c) With reference to Figure 2, explain whether demand for **each** of the four selected food groups is price elastic or price inelastic.

**(4)**

*Price elastic demand means PED is between −1 and −∞: a change in price causes a more than proportional change in quantity demanded. Price inelastic demand means PED is between 0 and −1: a change in price causes a less than proportional change in quantity demanded.*

*Demand for vegetables (−0.77), fish (−0.70) and meat (−0.52) is price inelastic, as each value is between 0 and −1. For example, a 10% rise in the price of meat reduces quantity demanded by only 5.2%.*

*Demand for rice (−1.82) is price elastic, as its value is less than −1: a 10% rise in the price of rice in Japan reduces quantity demanded by 18.2%, perhaps because consumers can switch to close substitutes such as bread or noodles.*

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(d) With reference to Extract B, examine **two** external costs associated with rice production.

**(8)**

*External costs are the negative spillover costs of production or consumption that fall on third parties who are not involved in the transaction and are not compensated, so the marginal social cost of producing rice is greater than the marginal private cost to the farmer.*

*One external cost is greenhouse gas emissions. Rice paddies produce 12% of global methane emissions and 1.5% of all greenhouse gas emissions, and Vietnam's paddy fields emit more carbon than its whole transport network. These emissions add to global warming, which raises sea levels and the risk of flooding, droughts and wildfires. This damages the homes, crops and businesses of third parties all over the world, and governments must spend more on flood defences and disaster relief.*

*However, the magnitude may be smaller than it first appears, as rice contributes only 1.5% of all greenhouse gas emissions, far less than energy or transport. Also 90% of rice is eaten in the country where it is grown, which limits emissions from transporting it abroad. The costs are also long-run and very difficult to quantify, as they appear only after many years of climate change.*

*A second external cost comes from the insecticides rice growers use, which contributed to a 44% fall in the USA's bee population in 2020. Bees pollinate fruit, nut and vegetable crops, so fewer bees means lower yields for other farmers and less honey for beekeepers. This reduces their revenue and profits and may raise food prices for consumers, even though they had no part in rice production.*

*However, it is difficult to value this cost or to blame rice alone, as bee numbers are also hit by disease, habitat loss and other crops' pesticides, and the 44% figure is only for the USA. Overall,*

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the greenhouse gas emissions are probably the more significant external cost because they are global and long-lasting, while the damage to bees is more local and could be reduced by switching to safer insecticides.

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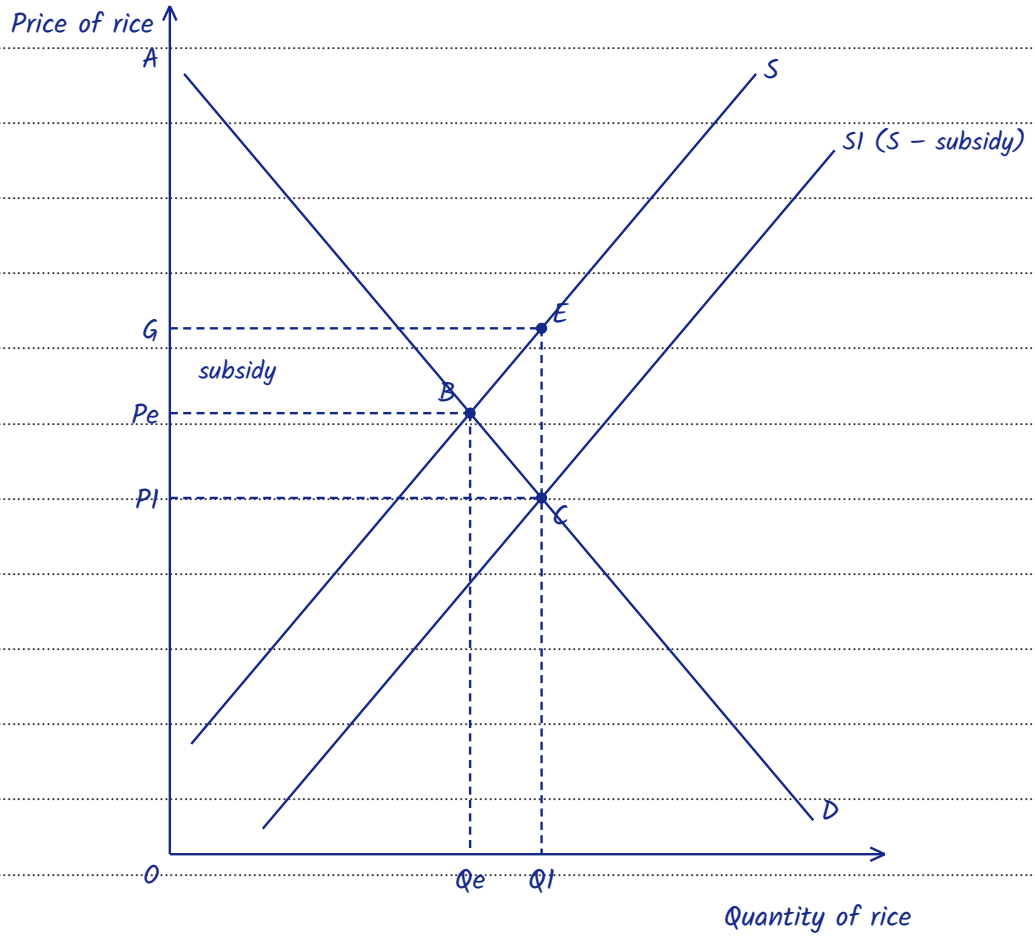
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(e) With reference to Extract C, discuss the benefits of subsidies paid to rice growers.

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. In 2021 the Indian Government spent $6.9 billion subsidising rice, and farmers use the money to buy capital goods, fertiliser and water. As shown in the diagram, the subsidy shifts supply to the right from S to S1 by the amount of the subsidy per unit (GP1).




Consumers benefit because the price of rice falls from Pe to P1 and the quantity bought rises from Qe to Q1. Consumer surplus increases from area APeB to area AP1C. As rice is a staple food, this raises the real incomes of poorer households and improves food security, which matters at a time when the world price of rice has risen by over 19.6% (Figure 1).

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Producers benefit because they receive G per unit (the market price P1 plus the subsidy) rather than Pe, and sell more. Their revenue rises from 0PeBQe to 0GEQ1, so profits rise. Farmers can use the extra funds to invest in capital goods such as tractors and irrigation, which raises productivity and lowers long-run costs, shifting supply further to the right.

The wider economy and workers also gain. The rice sector contributes $51.58 billion to India and exports to 150 countries, so lower costs make Indian rice more price competitive abroad, raising export revenue and economic growth. Higher output needs more workers, creating jobs and job security in rural areas, and the subsidy is politically popular with farmers.

However, the benefits must be weighed against the cost. The government pays the subsidy area GECP1, which was $6.9 billion in 2021. This has a large opportunity cost, as the money could have been spent on healthcare, education or infrastructure, and it may have to be funded by higher taxes or borrowing.

Extract C also states that subsidies lead to over-farming that results in lower quality rice, so consumers may get cheaper but poorer rice and the land may become less fertile, reducing future output. Subsidised water and fertiliser also add to external costs, as one kilogram of rice already uses 2 500 litres of water.

The size of the benefits depends on the size of the subsidy and on elasticities. If supply is price inelastic in the short run, output rises only a little; if demand is price inelastic, most of the benefit goes to consumers as a lower price rather than to farmers. Benefits may also go mainly to large farms, and farmers may become dependent on the subsidy: when the government tried to cut it in 2022, mass protests forced it back to its previous level, a sign of possible government failure.

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Overall, rice subsidies bring clear short-run benefits to poor consumers, farmers and rural workers in a sector worth $51.58 billion. However, the long-run benefits are doubtful because of over-farming, lower quality, external costs and a high opportunity cost. The benefits would be greatest if the subsidy were targeted at capital goods that raise productivity and were phased out over time.

**(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** The table shows predictions about population change produced by the United Nations for selected countries.

| Country | 2021 | 2100 |
|---|---|---|
| United Arab Emirates | 9.4 million | 14.1 million |
| Bolivia | 12.1 million | 18.8 million |
| Philippines | 113.9 million | 180.2 million |

(Source: adapted from https://ourworldindata.org/grapher/comparison-of-world-population-projections)

Evaluate possible factors that could cause a rightward shift of a country's production possibility frontier.

Include at least one relevant diagram in your answer.

**(Total for Question 13 = 20 marks)**

**OR**

**14** The table shows the total number of aeroplane flights globally and their contribution to global carbon emissions in 2009 and 2019.

| | 2009 | 2019 |
|---|---|---|
| Total number of aeroplane flights | 25.9 million | 38.9 million |
| Global carbon emissions | 2.0% | 2.5% |

Evaluate the likely impact of imposing indirect taxes on aeroplane flights to reduce carbon emissions.

Include at least one relevant diagram in your answer.

**(Total for Question 14 = 20 marks)**

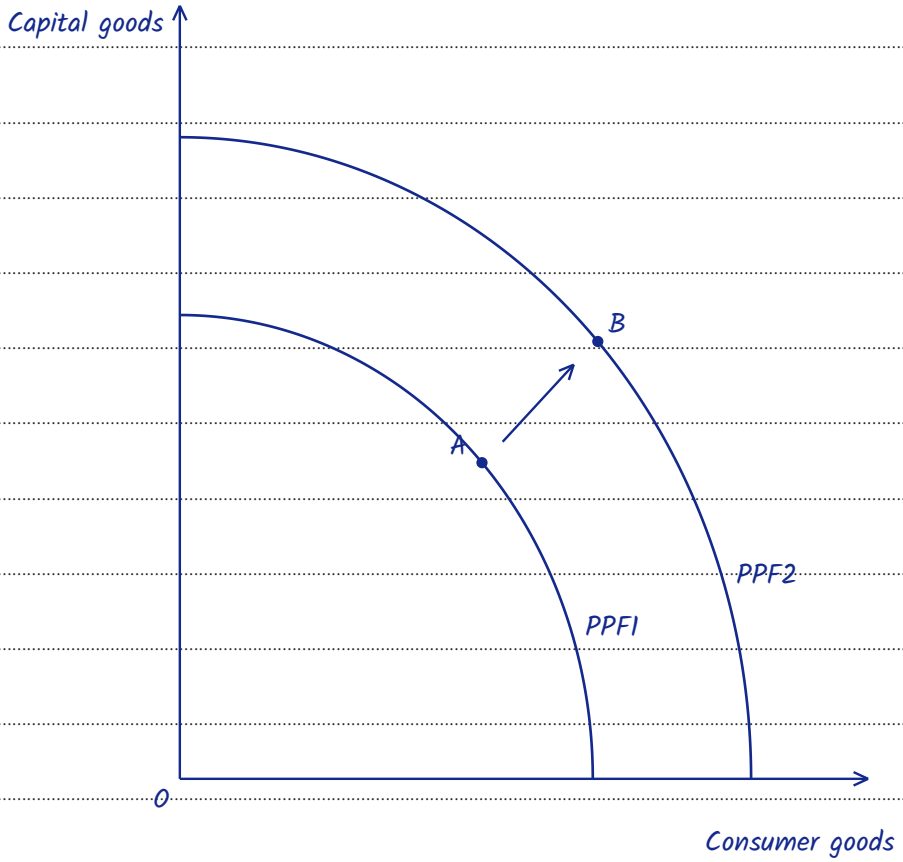
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**Indicate which question you are answering by marking a cross in the box ☒. If you change your mind, put a line through the box ☒ and then indicate your new question with a cross ☒.**

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

Write your answer here:

A production possibility frontier (PPF) shows the maximum possible combinations of two goods an economy can produce when all its resources are fully and efficiently employed, with a given state of technology. A rightward (outward) shift, from PPF1 to PPF2, means the productive potential of the economy has increased, which happens when the quantity or quality of the factors of production increases.




The first factor is an increase in the size of the population and labour force. The UN predicts that between 2021 and 2100 the population of the UAE will rise from 9.4m to 14.1m (a 50% increase), Bolivia from 12.1m to 18.8m (about 55%) and the Philippines from 113.9m to 180.2m (about 58%). More people of working age means more labour is available, so more of both goods can be produced and the PPF shifts outwards from A on PPF1 to B on PPF2.

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Governments can add to this by encouraging immigration, for example by offering more work visas, which quickly increases the size of the workforce.

However, population growth only shifts the PPF if the extra people are of working age and have the right skills. If the growth comes from a higher birth rate, there is a time lag of 16 to 20 years before they join the labour force, and in the meantime there are more dependants, putting pressure on schools, healthcare and housing. If there are not enough jobs, the extra workers may be unemployed, so the economy produces inside its PPF and actual output does not rise. Immigrants may also be unable to find work that matches their skills, and payments to attract them have an opportunity cost.

A second factor is investment in capital goods, such as machinery, factories and infrastructure. More capital per worker raises labour productivity, so the same workforce can produce more output, shifting the PPF outward. Governments can encourage this with tax breaks or subsidies for investment.

However, investment has an opportunity cost: to produce more capital goods today the economy must move along its PPF and give up consumer goods, lowering living standards in the short run. The effect also depends on whether firms can finance investment, for example if interest rates are high, and capital goods depreciate, so some investment simply replaces worn-out machinery.

A third factor is an improvement in the quality of labour through education, training and healthcare. Better skills and fewer days lost to illness raise productivity, so output per worker rises and the PPF shifts outward. Policies such as raising the retirement age can also increase the labour force.

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However, there is a long time lag before spending on education raises productivity, and if the money is spent on the wrong skills, due to information failure, the effect on productive potential will be small. Healthcare spending mainly helps productivity if it is preventative, and forcing people to work longer may cause unrest.

A fourth factor is new technology from research and development, including artificial intelligence, which allows more output from the same resources. The discovery of new natural resources such as oil or minerals also increases the quantity of land available and shifts the PPF outwards.

However, much research and development fails and is costly, AI brings unknown risks such as job losses, and natural resources such as oil are non-renewable, so using them up could shift the PPF back inwards in the long run and cause external costs to the environment.

In conclusion, all of these factors can shift the PPF to the right, but the most significant are probably those that raise the quality of resources and productivity, such as investment in capital, education and technology. Population growth, as predicted for the UAE, Bolivia and the Philippines, increases total productive potential, but only if the extra people are employed and skilled; otherwise output per person may not rise at all. The size of the shift therefore depends on how the extra resources are used and on the time period considered, with most effects only felt in the long run.

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**TOTAL FOR SECTION D = 20 MARKS**
**TOTAL FOR PAPER = 80 MARKS**





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# Pearson Edexcel International Advanced Level

## Thursday 9 May 2024

Afternoon (Time: 1 hour 45 minutes)

**Paper reference** **WEC11/01**

# Economics

**International Advanced Subsidiary**
**UNIT 1: Markets in Action**

**Source Booklet**
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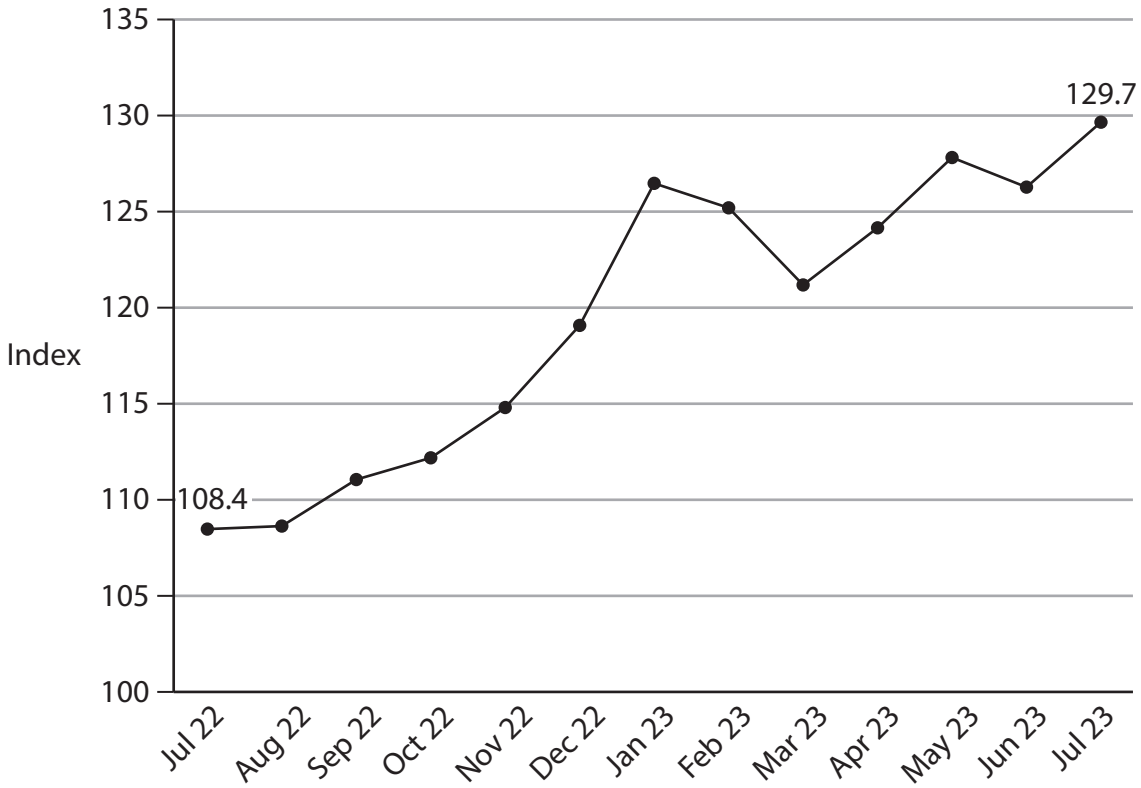
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**Sources for use with Section C.**

## The market for rice

**Figure 1: Index of the world price for rice, July 2022 to July 2023 (July 2016 = 100)**




### Extract A Rice price rising

The global price of rice increased by over 19.6% between July 2022 and July 2023. Rice consumption in Africa and Asia is growing rapidly, as populations increase and incomes rise. In 2022 the population grew by 2.45% in Africa and by 0.83% in Asia. This compared to a 0.06% increase in Europe. In 2022 average real income growth was approximately 4% in Asia and 3.85% in Africa. In advanced economies the average increase in real incomes was only 2%. 5



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**Figure 2: Estimated price elasticities of demand in Japan for selected food groups**

| Food item | Estimate of price elasticity of demand |
|---|---|
| Vegetables | –0.77 |
| Fish | –0.70 |
| Meat | –0.52 |
| Rice | –1.82 |

**Extract B The impact of rice production**

Rice production contributes 12% of global methane emissions and 1.5% of all greenhouse gas emissions. Vietnam's paddy fields, where the rice is grown, produce more carbon emissions than the country's transportation network.

Producing one kilogram of rice requires 2 500 litres of water. Rice production uses over 33% of the world's irrigation water.

Rice growers often use an insecticide to protect the crop from insects. In the USA these insecticides contributed to a 44% decline in the bee population in 2020.

On average, 90% of rice is consumed in the country in which it is grown. This limits the environmental damage caused by transporting rice abroad.

**Extract C Indian Government intervention in the market for rice**

The rice sector contributes $51.58 billion to the Indian economy. India exports rice to 150 countries.

The Government supports rice growers by providing subsidies. These subsidies are used by farmers to invest in capital goods and to purchase fertiliser and water used in production. This can lead to over-farming that results in lower quality rice crops.

In 2021 the Indian Government spent $6.9 billion on subsidising rice production.

In 2022 the Government decided to reduce expenditure on these subsidies. However, this caused mass protests from farmers that led to the Government increasing these subsidies to their previous levels.



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**Acknowledgements**

Figure 1 adapted from:
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Extract A adapted from:
'The global rice crisis', Bassi Akbarpur, The Economist, 1 April 2023
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Extract B adapted from:
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