9.1 Energy Insecurity: Causes of Growing Energy Demand and Supply Issues: 30-minute Pack

AQA 8035 · Calculators not allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 State what is meant by 'deep-water drilling' in the context of oil and gas extraction.

(Total for Question 1 is 1 mark)

2 Give TWO examples of economic development changes that increase energy demand in a country, for example linked to industrialisation or rising incomes.

(Total for Question 2 is 2 marks)

3 State TWO reasons why many countries still rely heavily on fossil fuels for energy supply.

(Total for Question 3 is 2 marks)

4 Give ONE example of an extraction technology that requires high capital investment and specialist equipment, mentioned in discussions of exploiting new fossil fuel reserves.

(Total for Question 4 is 1 mark)

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5 Give TWO examples of 'hostile' physical environments that make fossil fuel extraction more difficult and expensive.

(Total for Question 5 is 2 marks)

6 Give TWO political reasons why a promising new reserve might remain untapped.

(Total for Question 6 is 2 marks)

7 Give ONE physical factor and ONE political factor that can limit the exploitation of new fossil fuel reserves.

(Total for Question 7 is 2 marks)

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8 Explain TWO causes of energy insecurity, using specific links to supply, demand or the cost of extraction.

(Total for Question 8 is 6 marks)

9 Explain TWO ways in which the high cost and technical difficulty of extracting new fossil fuel reserves can contribute to higher global energy prices.

(Total for Question 9 is 5 marks)

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Mark scheme · 9.1 Energy Insecurity: Causes of Growing Energy Demand and Supply Issues: 30-minute Pack

Question 1

drilling for oil or gas from a platform in water depths significantly greater than coastal operations, often several hundred metres or more, oe **B1**

Answer: Drilling for oil or gas from a platform in water depths significantly greater than coastal operations, often several hundred metres or more.

Question 2

e.g. industrialisation, such as more factories and heavy industry, oe **B1**

e.g. rising incomes leading to increased ownership of cars and electrical appliances, oe **B1**

Answer: Industrialisation, such as more factories and heavy industry; rising incomes leading to increased ownership of cars and electrical appliances.

Question 3

fossil fuels are currently abundant in many places and existing infrastructure is built for them, oe **B1**

they often provide reliable base-load power and are economically cheaper to use given current markets, oe **B1**

Answer: Because fossil fuels are currently abundant in many places and existing infrastructure is built for them; and they provide reliable base-load power and are often cheaper given current markets.

Question 4

e.g. deep-water drilling, fracking for shale gas, or horizontal drilling, oe **B1**

Answer: Deep-water drilling.

Question 5

e.g. Arctic regions with extreme cold and ice, oe **B1**

e.g. deep offshore (deep-water) sites far from shore, oe **B1**

Answer: Arctic regions with extreme cold and ice; deep offshore (deep-water) sites far from shore.

Question 6

e.g. disputed ownership or border claims over the area, oe **B1**

e.g. sanctions, trade embargoes or unstable government discouraging foreign investment, oe **B1**

Answer: Disputed ownership or border claims over the area; sanctions, trade embargoes or unstable government discouraging foreign investment.

Question 7

physical factor, e.g. reserves in remote or hostile environments such as deep water or Arctic regions, oe **B1**

political factor, e.g. disputed territory or unstable government preventing investment and extraction, oe **B1**

Answer: Physical factor: reserves in remote or hostile environments such as deep water or Arctic regions. Political factor: disputed territory or unstable government preventing investment and extraction.

Question 8

cause 1 stated, e.g. rising demand due to population growth and industrialisation, oe **B1**

linked development, e.g. more people and higher incomes increase energy use for transport, heating and manufacturing, increasing pressure on supply, oe **B1**

cause 2 stated, e.g. difficulty or cost of exploiting new reserves, oe **B1**

linked development, e.g. reserves in deep water or disputed areas need expensive technology or face political barriers, reducing available supply and driving prices up, oe **B1**

additional valid linked point, e.g. over-reliance on a few fossil fuel sources or on imports increases vulnerability to price shocks and supply disruption, oe **B1**

linked development or example, e.g. sudden export restrictions or price rises from major suppliers can quickly make energy unaffordable or scarce, oe **B1**

Answer: Possible answer: Rising demand from population growth and industrialisation increases pressure on supplies as more energy is needed for transport, heating and manufacturing. At the same time, many new reserves are costly or difficult to exploit, for example deep-water fields or shale requiring fracking, so supply cannot expand easily and prices rise; over-reliance on a few sources or imports also makes countries vulnerable to supply shocks and price spikes.

Question 9

point 1 stated, e.g. expensive extraction increases production costs, oe **B1**

linked development, e.g. companies pass higher production costs to consumers through higher prices, oe **B1**

point 2 stated, e.g. technical difficulty reduces supply growth, oe **B1**

linked development, e.g. if supply cannot expand to meet rising demand, competition for available energy raises prices, oe **B1**

additional linked point or example, e.g. capital-intensive projects require long lead times and risk premiums, which investors recoup via higher prices, oe **B1**

Answer: Expensive extraction raises production costs, which suppliers pass on to consumers so prices rise. Technical difficulty and long lead times mean supply cannot quickly expand to match demand, so competition for limited supply pushes prices up; capital-intensive projects also require risk premiums that feed into higher final prices.

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