

Energy Resources & Electricity Generation Question Paper

Level	GCSE
Subject	Physics
Exam Board	Edexcel IGCSE
Module	Single Award (Paper 2P)
Topic	Energy Resources & Energy Transfer
Sub-Topic	Energy Resources & Electricity Generation
Booklet	Question Paper

Time Allowed: 37 minutes

Score: /31

Percentage: /100

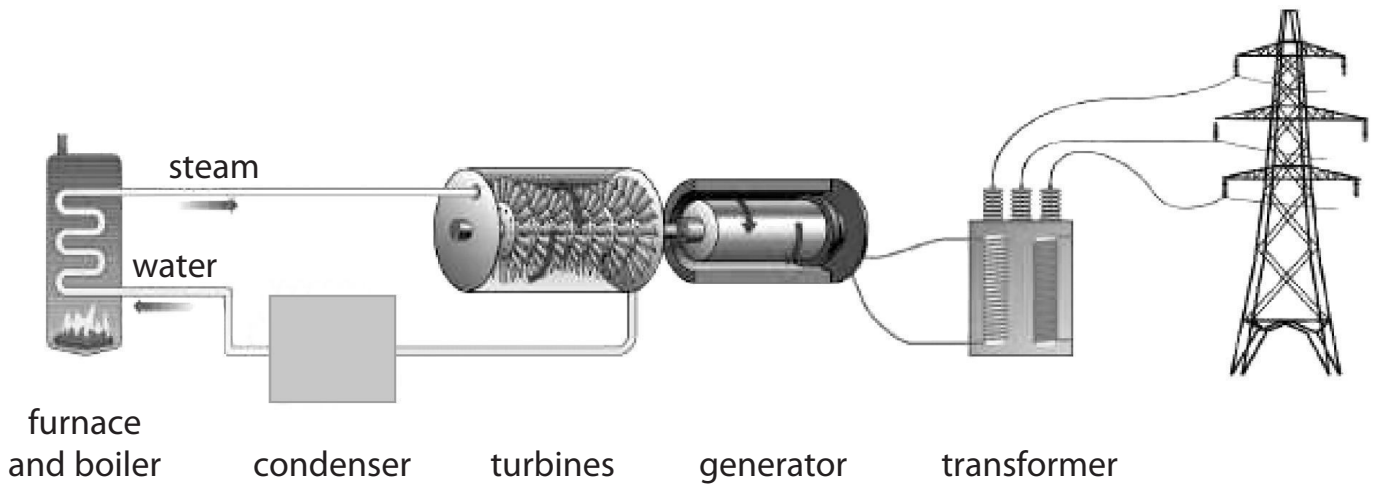
Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	70%	60%	55%	50%	<50%

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1. The diagram shows a coal-fired power station.



(a) (i) In which part of the power station is heat energy usefully converted to kinetic energy?

(1)

- A boiler
- B turbine
- C generator
- D wires

(ii) In which part of the power station is kinetic energy usefully converted to electrical energy?

(1)

- A boiler
- B turbine
- C generator
- D wires

(b) A transformer is used to convert the 25 kV output from the power station to 115 kV.

(i) State the equation linking power, voltage and current.

(1)

(ii) Compare the input current and the output current of the transformer.

Assume there are no energy losses in the transformer.

(3)

(iii) State one advantage of transmitting electricity at high voltages.

(1)

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(c) Some power stations use uranium as a fuel.

Describe the problems that arise from the disposal of waste from this type of power station.

(4)

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2. A coal-fired power station and a wind turbine both produce electrical power.

The power station produces 1200 MW and the wind turbine produces 1.5 MW.



(a) Give **one** advantage of using wind turbines instead of a coal-fired power station to produce electricity.

(1)

(b) Coal-fired power stations are still in general use.

Explain why wind turbines have not replaced them.

(4)

(Total for Question 2 = 5 marks)

3. Some energy sources are renewable and other energy sources are non-renewable.

(a) (i) Explain what is meant by the term **non-renewable**.

(1)

(ii) Give an example of a non-renewable energy source.

(1)

(b) The photograph shows a wind farm that generates electricity for the National Grid.



(i) Some wind farms are in remote areas.

Explain how the electrical energy from a remote wind farm is transmitted to large cities.

(3)

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(ii) Some people think that wind farms are a good idea.

Others disagree.

Discuss the advantages and disadvantages of building more wind farms.

(6)

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(Total for Question 3 = 11 marks)

4. An energy company plans to build a new power station.

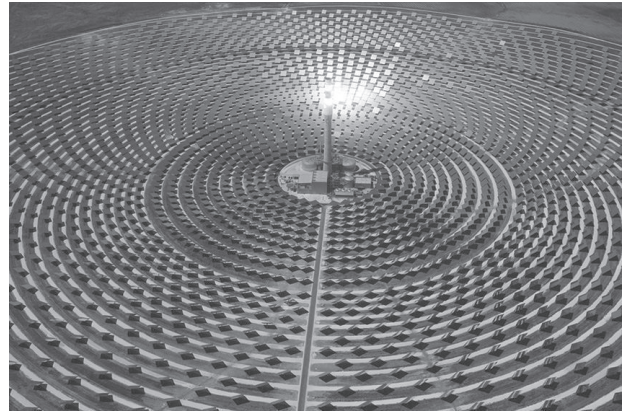
The company must decide between two renewable energy projects, a geothermal power station or a solar power station.

Geothermal power station



(Author: Gretar Ívarsson, geologist at Nesjavellir, 2006)

Solar power station



(Author: Torresol Energy, 2011)

Explain how the location and the climate might affect the type of power station that the company chooses.

(4)

location

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climate

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(Total for Question 4 = 4 marks)