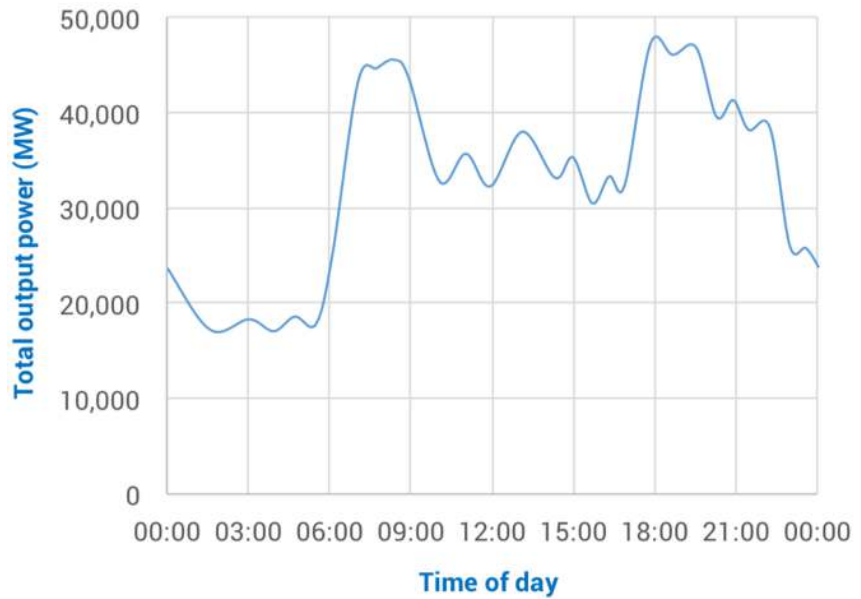


0	1
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The way in which the total amount of electrical power produced in the UK varies over the course of a typical day is described by the below graph.



0	1	.	1
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Describe the trend in the above data.

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[2 marks]

0	1	.	2
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At present, just a small amount of UK electricity is produced by hydroelectric power. Many hydroelectric power schemes use a technique known as pumped storage. Explain what is meant by **pumped storage**.

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[3 marks]

0	1	.	3
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Using information from the above graph, suggest a time at which UK hydroelectric power stations could operate in pumped storage mode. Explain your answer.

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[2 marks]

0 1 . 4

At present, roughly half of our electricity is generated through the burning of fossil fuels, but this figure is likely to decrease over the coming decades as the government has committed itself to reducing UK carbon dioxide emissions by 80% by the year 2050. Write down one **advantage** of using fossil fuels for the generation of electricity, then explain why the government is keen to **reduce their usage**.

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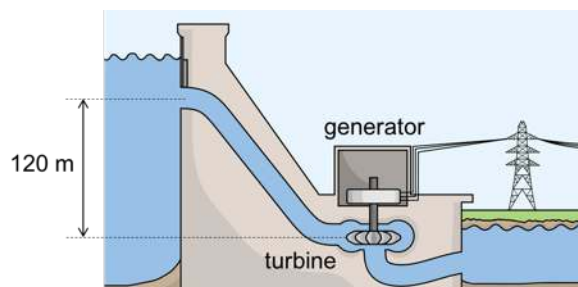


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[2 marks]

0 2

In a particular hydroelectric power station, 500,000 kg of water passes through a turbine per minute. Before doing so, this water falls through a height of 120 m, as shown in the below diagram. Take  $g = 9.8 \text{ N/kg}$ .



0 2 . 1

Calculate the amount of gravitational potential energy lost by this amount of water as it flows towards the turbine.

Answer = \_\_\_\_\_ J

[2 marks]

0 2 . 2

Hence calculate the maximum power output of the generator. Write your answer in megawatts, remembering that  $1 \text{ MW} = 10^6 \text{ W}$ .

Maximum power output = \_\_\_\_\_ MW

[2 marks]

0 2 . 3

In practice, the amount of electrical power generated by the power station will be less than the value you calculated in the previous question. Write down **one** reason for this.

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[1 mark]