Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Q1.

Over the next 15 years, some of the older nuclear power stations will be closed down, and the process of *decommissioning* will start. In the same period, several countries plan to build a number of new nuclear power stations.

(a) (i) What does it mean to *decommission* a nuclear power station?

_____

_____

(1)

(ii) How does *decommission*ing affect the overall cost of electricity generated using nuclear fuels?

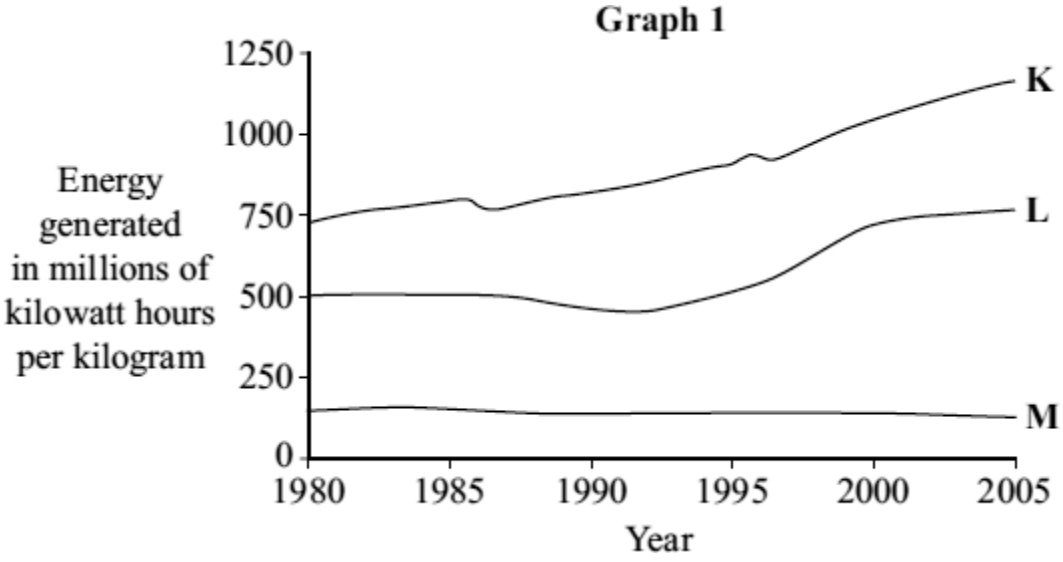
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(1)

(b) Uranium is a fuel used in nuclear power stations to generate electricity.

Graph 1 compares how the electricity generated from one kilogram of nuclear fuel changed between 1980 and 2005 in three different types of nuclear power station.



(i) Compare the efficiency of the three types of power station, **K**, **L** and **M**, between 1980 and 2005.

_____

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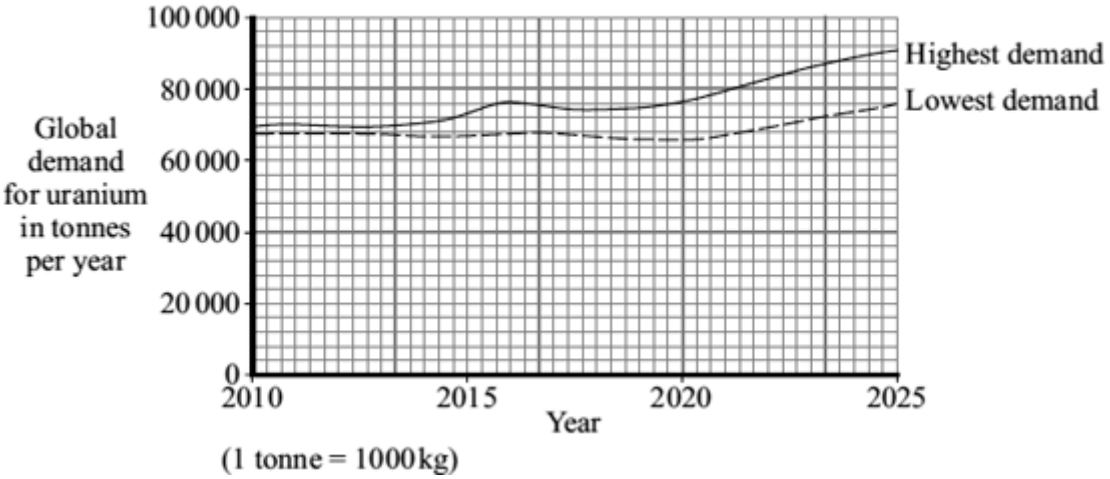
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_____

(2)

Graph 2 shows two different predictions for the global growth in uranium demand over the next few years.

Graph 2



(ii) Suggest reasons why it is **not** possible to predict accurately how much uranium will be needed in 2025.

_____

_____

_____

_____

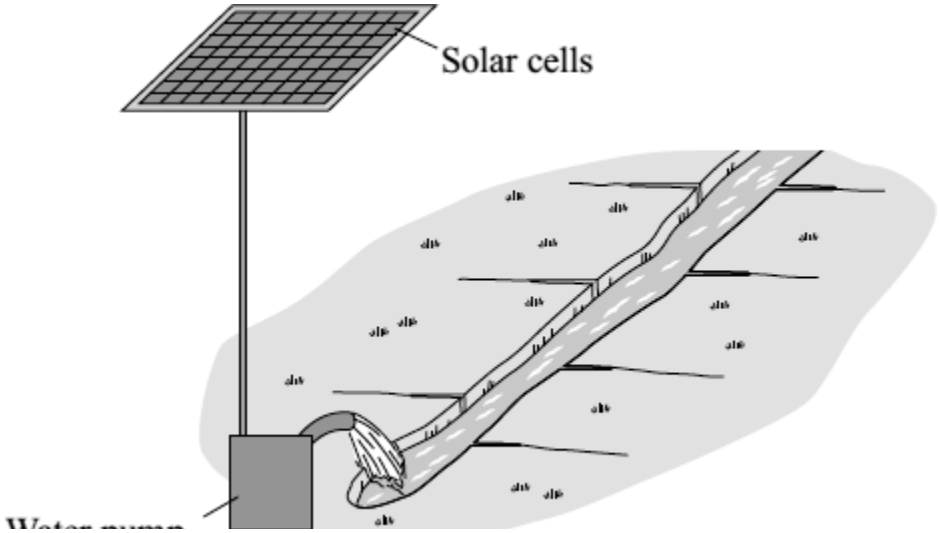
(2)

(Total 6 marks)

Q2.

The farmers in a village in India use solar powered water pumps to irrigate the fields.

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On average, a one square metre panel of solar cells receives 5 kWh of energy from the Sun each day.
The solar cells have an efficiency of 0.15

(a) (i) Calculate the electrical energy available from a one square metre panel of solar cells.

Show clearly how you work out your answer.

_____

_____

Electrical energy = _____ kWh

(2)

(ii) On average, each solar water pump uses 1.5 kWh of energy each day.

Calculate the area of solar cells required by one solar water pump.

Area = _____ square metres

(1)

(b) Give **one** reason why the area of solar cells needed will probably be greater than the answer to part (a)(ii).

_____

_____

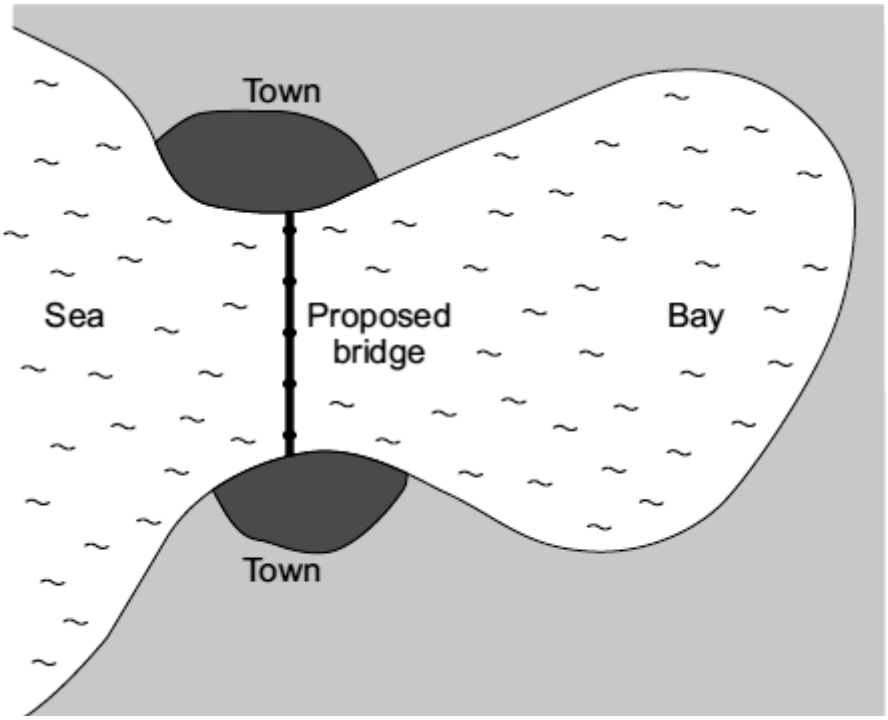
(1)

(Total 4 marks)

Q3.

The map shows the positions of two towns on either side of a very large coastal bay in England. The map also shows where a bridge may be built to link the towns. The road journey from one town to the other is about 60 kilometres at present.

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(a) It is estimated that building turbines and generators inside the legs of the bridge would produce enough electricity for both towns. In addition, enough electricity would be generated to run electric buses over the bridge between the two towns.

(i) If the bridge is built, what form of renewable energy will be used to generate the electricity?

_____

(1)

(ii) Most people living in the area are in favour of the proposed bridge.

Suggest **three** reasons why people would be in favour of building the bridge and the associated electricity generating scheme.

Reason 1 _____

_____

Reason 2 _____

_____

Reason 3 _____

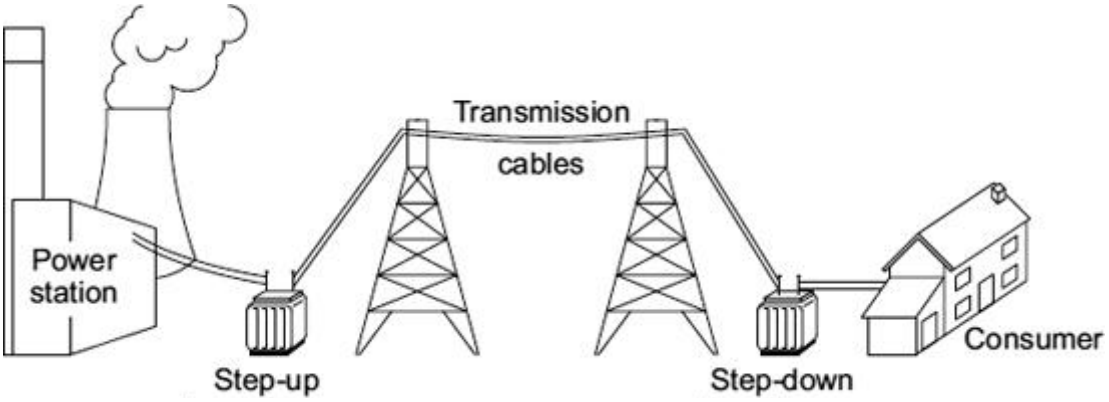
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(3)

(b) Even with the proposed bridge, the two towns will need to stay connected to the National Grid.

The diagram shows part of the National Grid.

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(i) Give **one** reason why the towns need to stay connected to the National Grid.

_____

_____

(1)

(ii) Explain how the step-up transformer increases the efficiency of the National Grid.

_____

_____

_____

_____

(2)

(Total 7 marks)

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