Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic: Energy (Low Demand)

Name of the Student:_____
Max. Marks : 22 Marks **Time : 22 Minutes**

Q1.

Iceland is a country that generates most of its electricity using geothermal power stations and hydroelectric power stations.

(a) (i) Complete the following sentences to describe how some geothermal power stations work.

In regions where volcanoes are active, the ground is hot.

Cold _____ is pumped down into the ground

and is _____ by hot rocks.

It returns to the surface as steam. The steam is used to turn a turbine.

The turbine drives a _____ to produce electricity.

(3)

(ii) Which **one** of the following statements about geothermal power stations is true?

Tick (✓) **one** box.

Geothermal power stations use fossil fuels. ☐

Geothermal power stations produce carbon dioxide. ☐

Geothermal power stations provide a reliable source of electricity. ☐

(1)

(b) What is needed for a hydroelectric power station to be able to generate electricity?

Tick (✓) **one** box.

Falling water ☐

A long coastline ☐

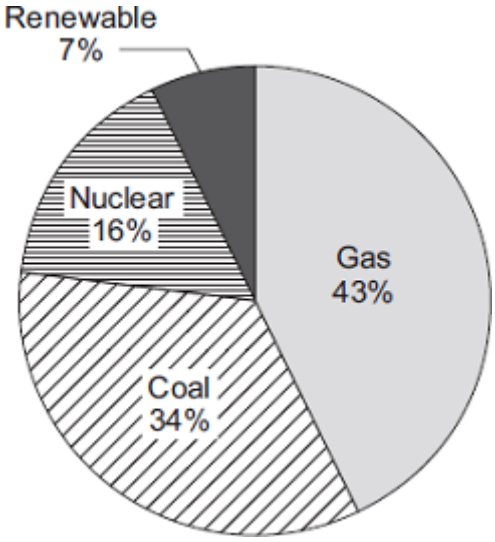
Lots of sunny days ☐

(1)

(Total 5 marks)

Q2.

(a) The pie chart shows the proportions of electricity generated in the UK from different energy sources in 2010.



(i) Calculate the percentage of electricity generated using fossil fuels.

_____

Percentage = _____ %

(1)

(ii) The pie chart shows that 7% of electricity was generated using renewable energy sources.

Which **one** of the following is **not** a renewable energy source?

Tick (✓) **one** box.

Oil ☐

Solar ☐

Wind ☐

(1)

(b) Complete the following sentence.

In some types of power station, fossil fuels are burned to heat _____ to produce steam.

(1)

(c) Burning fossil fuels releases carbon dioxide into the atmosphere.

Why do many scientists think adding carbon dioxide to the atmosphere is harmful to the environment?

Tick (✓) **one** box.

Carbon dioxide is the main cause of acid rain. ☐

Carbon dioxide causes global warming. ☐

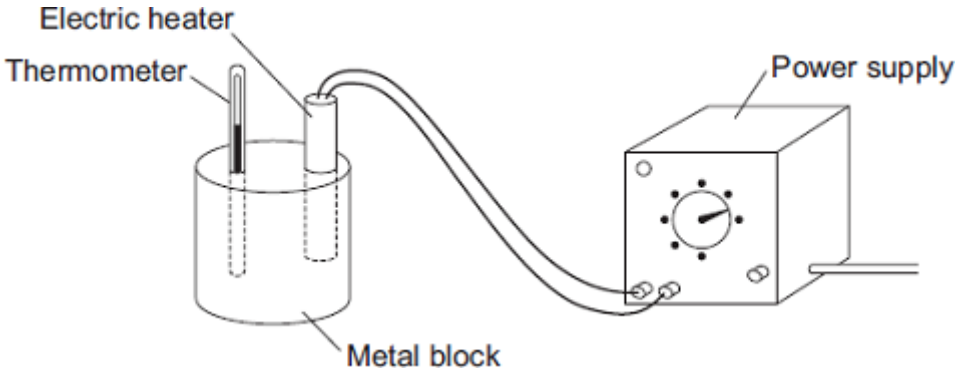
Carbon dioxide causes visual pollution. ☐

(1)

(Total 4 marks)

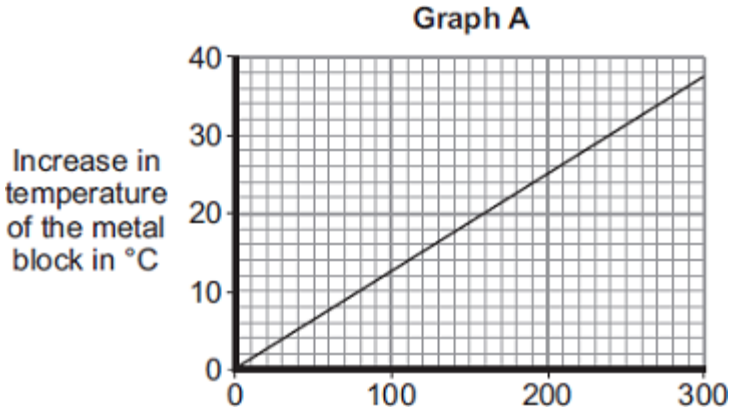
Q3.

(a) A student used the apparatus drawn below to investigate the heating effect of an electric heater.



(i) Before starting the experiment, the student drew **Graph A**.

Graph A shows how the student expected the temperature of the metal block to change after the heater was switched on.



Describe the pattern shown in **Graph A**.

_____

_____

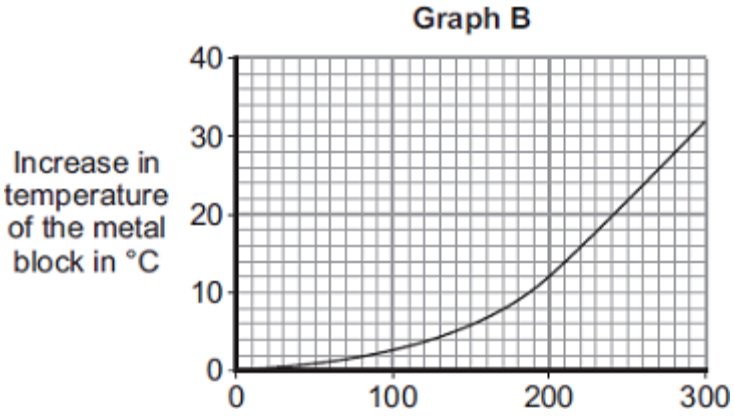
_____

_____

(2)

(ii) The student measured the room temperature. He then switched the heater on and measured the temperature of the metal block every 50 seconds.

The student calculated the increase in temperature of the metal block and plotted **Graph B**.



After 300 seconds, **Graph B** shows the increase in temperature of the metal block is lower than the increase in temperature expected from **Graph A**.

Suggest **one** reason why.

_____

_____

(1)

(iii) The power of the electric heater is 50 watts.

Calculate the energy transferred to the heater from the electricity supply in 300 seconds.

_____

_____

_____

Energy transferred = _____ J

(2)

(b) The student uses the same heater to heat blocks of different metals. Each time the heater is switched on for 300 seconds.

Each block of metal has the same mass but a different specific heat capacity.

Metal	Specific heat capacity in J/kg°C
Aluminium	900
Iron	450

Lead	130

Which **one** of the metals will heat up the most?

Draw a ring around the correct answer.

aluminium **iron** **lead**

Give, in terms of the amount of energy needed to heat the metal blocks, a reason for your answer.

_____

_____

_____

_____

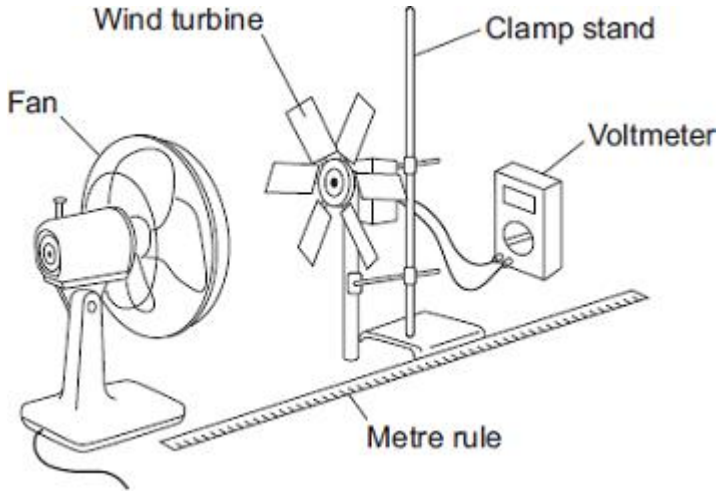
(2)

(Total 7 marks)

Q4.

(a) A student investigated how the number of blades on a wind turbine affects the output voltage of the turbine.

The student used the apparatus shown in the diagram.



The fan was used to turn the wind turbine.

(i) The fan was always the same distance from the wind turbine.

Why?

_____

_____

(1)

(ii) After switching the fan on, the student waited 20 seconds before taking the voltmeter reading.

Suggest why.

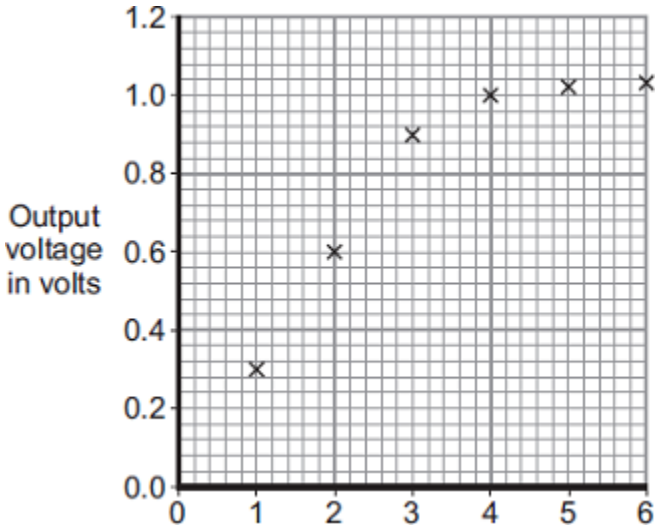
_____

_____

(1)

(iii) The student changed the number of blades on the wind turbine.

The student's results are shown in the scatter graph.



What conclusion can be made from the results in the scatter graph?

_____

_____

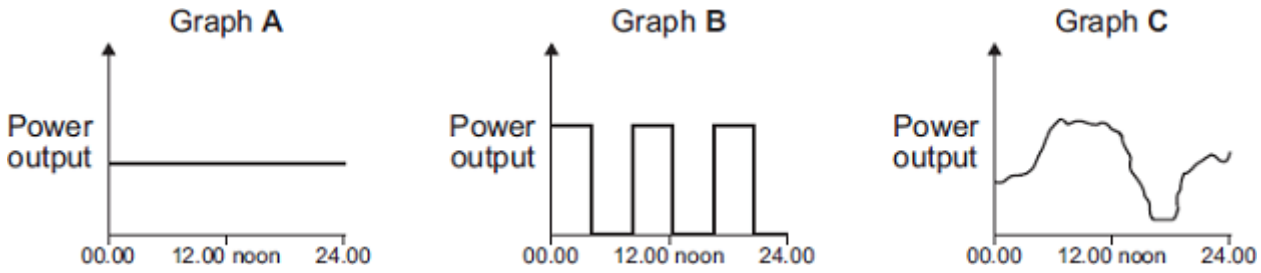
_____

_____

(2)

(b) The amount of electricity generated using wind turbines is increasing.

Which graph, **A**, **B** or **C**, is most likely to show the electrical power output from a wind turbine over one day?



Write the correct answer, **A**, **B** or **C**, in the box. 

Give a reason for your answer.

_____

_____

_____

(2)
(Total 6 marks)