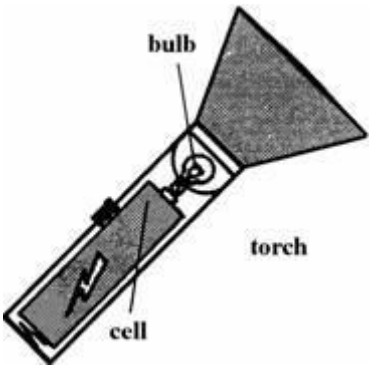
Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic: Electricity (Standard demand)

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Name of the Student:_____
Max. Marks : 23 Marks **Time : 23 Minutes**

Q1.

A small torch uses a single cell to make the bulb light up.

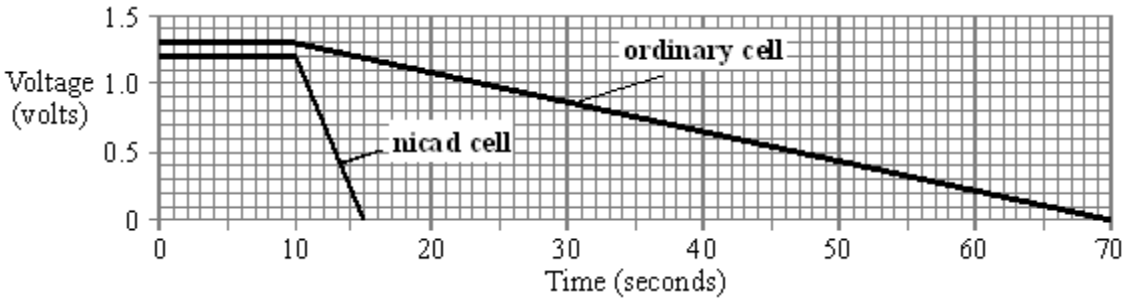


(a) Label the symbol for a cell and the symbol for a bulb (lamp)



(2)

(b) The graphs show the voltage across two different types of cell as they transfer the last bit of their stored energy through the torch bulb.



Describe the differences that the graphs show between the two types of cell.

_____

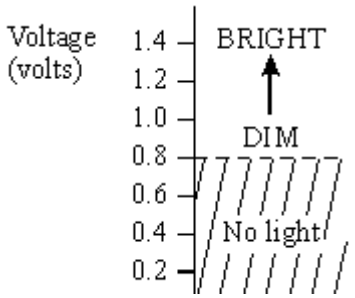
_____

_____

(3)

(c) The diagram shows how bright the torch bulb is for different voltages.

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From the point when the voltage of each cell starts to fall, how long will the bulb stay lit:

(i) with the ordinary cell?

_____

(ii) with the nicad cell?

_____

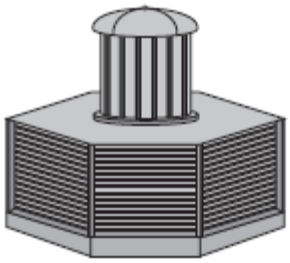
(4)

(Total 9 marks)

Q2.

A community of people living on an island are considering buying wind turbines to supply their electricity. The community have looked at two types of wind turbine.

Vertical Axis Wind Turbine



Horizontal Axis Wind Turbine



Not to scale

The community looked at information about the two different types of wind turbine.

• **Vertical axis wind turbines** start to rotate at wind speeds of 1.5 m/s. • Vertical axis wind turbines are powered by wind coming from any direction. • The power output at 12 m/s is 1 MW. • The wind turbines continue to generate electricity until the wind speed reaches 40 m/s.	• **Horizontal axis wind turbines** start to rotate at wind speeds of 3.6 m/s. • Horizontal axis wind turbines turn to point into the wind. • The power output at 12 m/s is 1 MW. • At very high wind speeds, above 20 m/s, the wind turbines stop working automatically to avoid damage.

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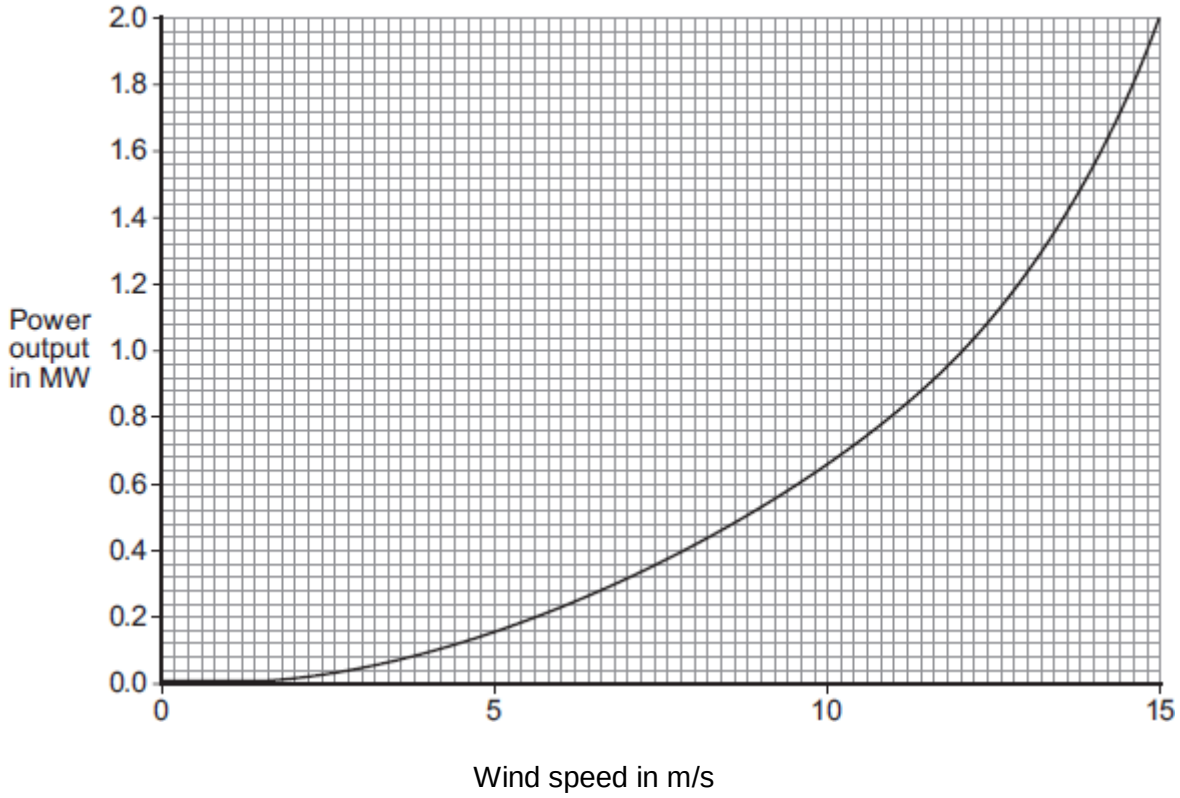
(a) The community decide that vertical axis wind turbines would be better.

Use the information given to suggest why.

(3)

(b) **Graph 1** shows how the power output varies with wind speed for a vertical axis wind turbine.

Graph 1



Describe how the power output of this wind turbine varies with wind speed for the range of wind speeds shown.

(2)

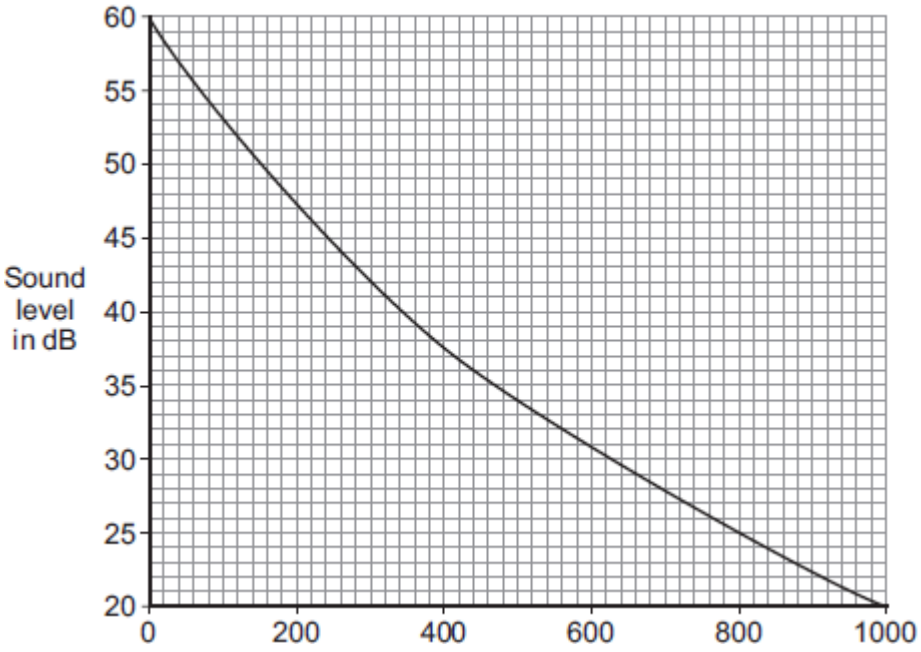
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(c) Some local people do not want the wind turbines. These people say the wind turbines are too noisy.

Graph 2 shows how the sound level detected changes with distance from a wind turbine.

Sound level is measured in decibels, dB.

Graph 2



The sound level of a normal conversation is 50 dB.

(i) How far from the wind turbine would a person need to stand to detect a sound level of 50 dB?

Distance = _____ metres

(1)

(ii) The graph shows that 1000 m away you can still hear the noise the wind turbines produce.

A sound level of 30 dB is the same as a person whispering in another person's ear.
The nearest house to the wind turbine is 1000 m away.

Some people do not want the wind turbines because of the noise the wind turbines produce.

Are these people justified in not wanting wind turbines?

Give reasons for your answer.

_____

_____

_____

_____

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(2)

(d) On the mainland, wind turbines are connected to the National Grid.

Electricity is transmitted through the power lines of the National Grid at very high voltages and low currents.

State why.

_____

_____

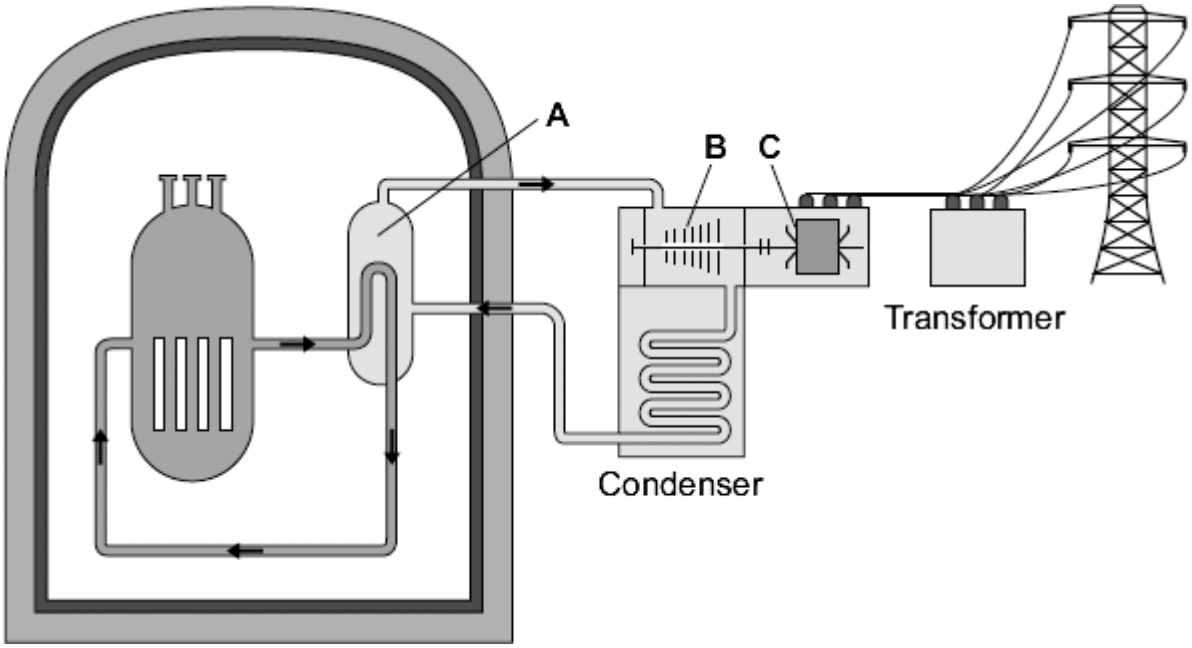
(1)

(Total 9 marks)

Q3.

A nuclear power station generates electricity using nuclear fuel.

The diagram below shows a nuclear power station.



(a) The transformer changes the voltage of the electricity generated by the power station.

(i) What type of transformer is shown in the diagram?

_____

(1)

(ii) Changing the voltage increases the efficiency of the power transmission.

Explain how.

_____

_____

_____

_____

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(2)

(b) A country generates 80% of its electricity using fossil fuel power stations.

The country's government is considering replacing all of its fossil fuel power stations with nuclear power stations.

Suggest **two** factors that the country's government will have to consider in making a decision.

_____

_____

_____

_____

(2)

(Total 5 marks)

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