

Name of the Student: _____

Max. Marks : 17 Marks

Time : 17 Minutes

Q1.

(a) The picture shows a wind-powered generator used to produce electricity for a house.



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(i) The table shows some electrical components.

Put ticks in the table next to the **two** components the generator must contain.

(2)

component	✓
ammeter	
coil of wire	
battery	
magnet	
voltmeter	

(ii) Explain why the voltage produced by this wind-powered generator is not always the same.

(2)

.....
.....
.....

.....
(iii) It would cost the homeowner 15 p to buy 1.0 kW h of electrical energy from the National Grid.

His generator has a maximum power of 2.0 kW.

The generator produces energy at this maximum power for 3 hours.

Calculate how much it would cost to buy the same amount of energy from the National Grid.

(2)

cost = p

(b) An electric kettle is plugged into a 230 V mains supply.

It has a power of 2.5 kW.

Use this equation to calculate the current in the kettle.

$$\text{current (in amps)} = \frac{\text{power (in watts)}}{\text{voltage (in volts)}}$$

(3)

current = A

(c) Suggest why a 2 kW wind-powered generator may not supply all the electrical energy needed in a house.

(1)

.....
.....
.....
.....

Q2.

Answer the question with a cross in the box you think is correct . If you change your mind about an answer, put a line through the box and then mark your new answer with a cross .

Figure 23 shows a model dynamo.

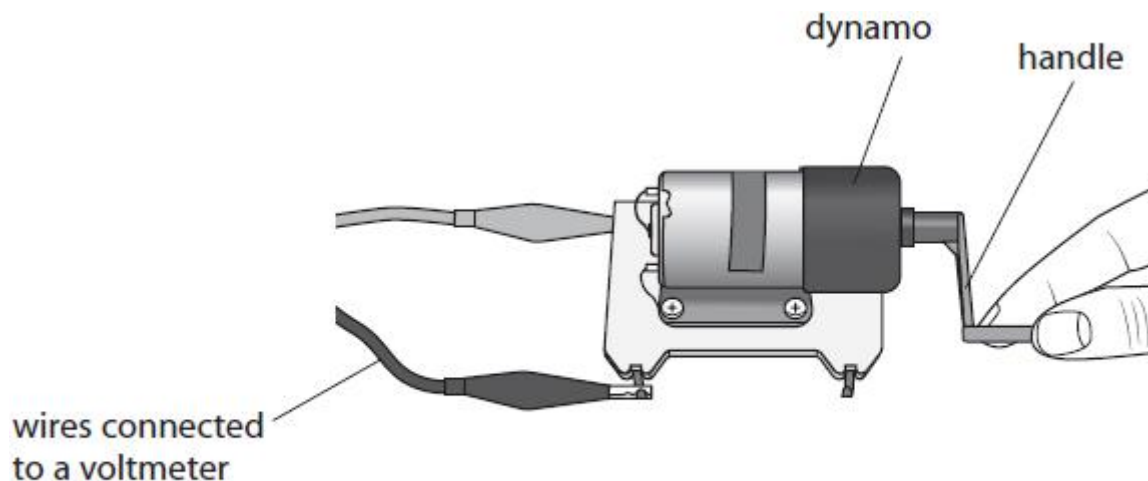


Figure 23

The dynamo contains a coil of wire that can spin inside a permanent magnet.

The dynamo produces a D.C. output.

A teacher connects a voltmeter to the terminals of the dynamo.

The teacher rotates the handle to make the coil spin inside the magnet.

Figure 24(a) shows the reading on the voltmeter.

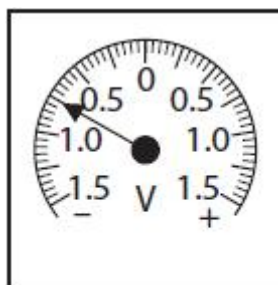


Figure 24(a)

The teacher then rotates the handle differently.

Figure 24(b) shows the new reading on the voltmeter.

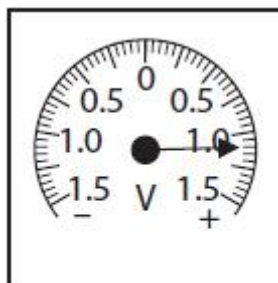


Figure 24(b)

(i) Which row of the table shows how the rotation of the handle has changed between (a) and (b)?

	speed of rotation	direction of rotation
<input type="checkbox"/> A	(a) faster than (b)	(a) opposite to (b)
<input type="checkbox"/> B	(a) faster than (b)	(a) same as (b)
<input type="checkbox"/> C	(a) slower than (b)	(a) opposite to (b)
<input type="checkbox"/> D	(a) slower than (b)	(a) same as (b)

(ii) The teacher connects the dynamo to a lamp.

It is now more difficult for the teacher to rotate the handle.

Explain why it is more difficult to turn the dynamo when it is connected to a lamp.

.....

.....

.....

.....

(Total for question = 3 marks)

Q3.

Answer the question with a cross in the box you think is correct . If you change your mind about an answer, put a line through the box and then mark your new answer with a cross .

Figure 15 shows three stages of a magnet moving into and then out of a coil of wire.

The coil is connected to a milliammeter.

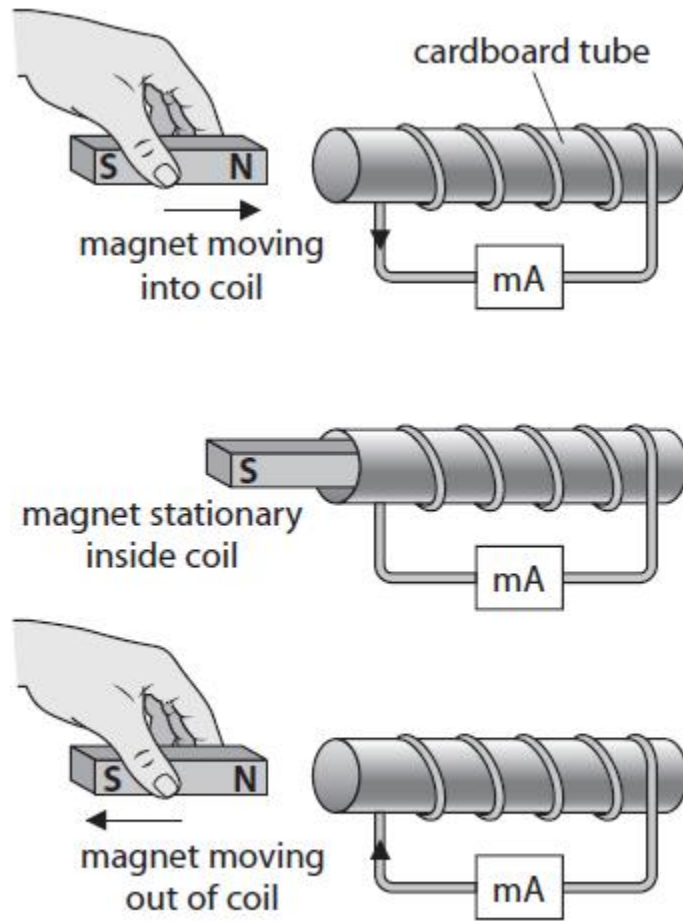


Figure 15

(i) Which row of the table shows the deflection on the milliammeter for the three stages in Figure 15?

(1)













	magnet moving into coil	magnet stationary inside coil	magnet moving out of coil
<input type="checkbox"/> A			
<input type="checkbox"/> B			
<input type="checkbox"/> C			
<input type="checkbox"/> D			

Figure 16

(ii) Give **two** ways of increasing the deflections on the milliammeter shown in Figure 16.

(2)

1

.....

2

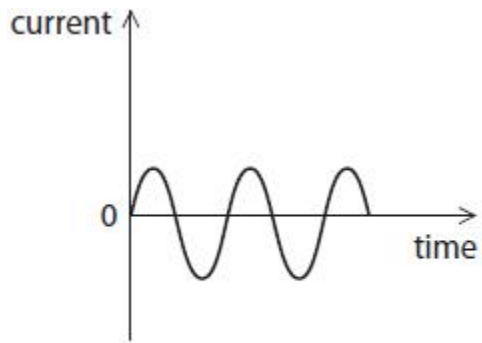
.....

(Total for question = 3 marks)

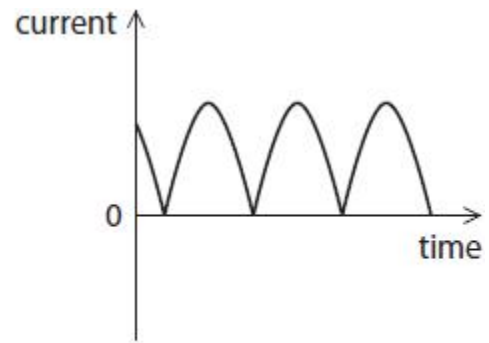
Q4.

Which of these could be the output for a dynamo?

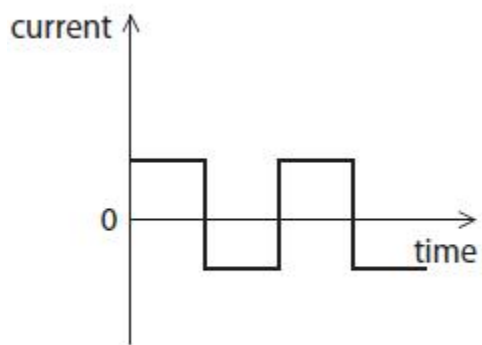
(1)



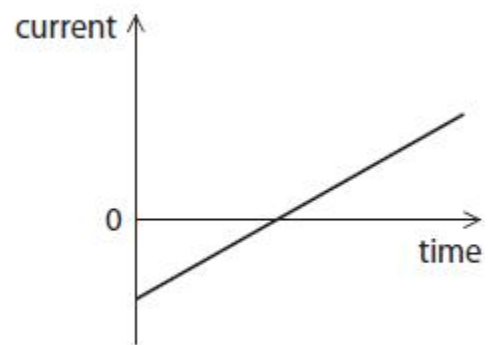
A



B



C



D

(Total for question = 1 mark)