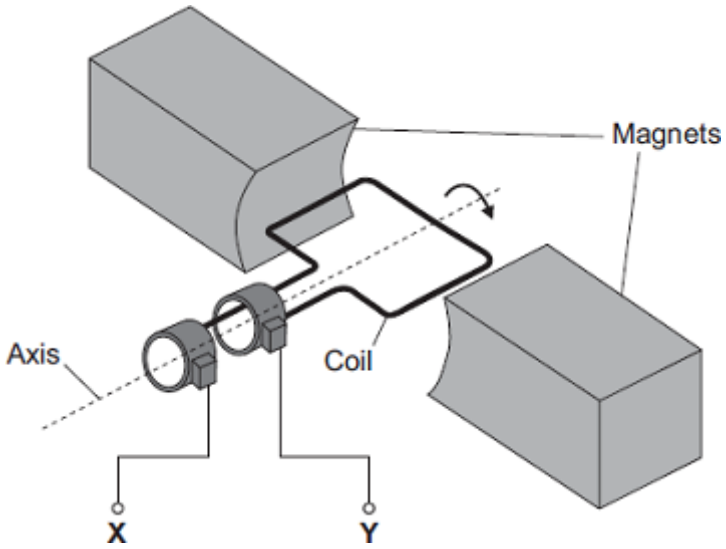
**Name of the Student**:_____
**Max. Marks : 20 Marks** **Time : 20 Minutes**

## Q1.

The diagram shows an a.c. generator.

The coil rotates about the axis shown and cuts through the magnetic field produced by the magnets.




(a) (i) A potential difference is induced between **X** and **Y**.

Use the correct answer from the box to complete the sentence.

| | | | |
|---|---|---|---|
| **electric** | **generator** | **motor** | **transformer** |

This effect is called the _____ effect.

**(1)**

(ii) What do the letters a.c. stand for?

_____

**(1)**

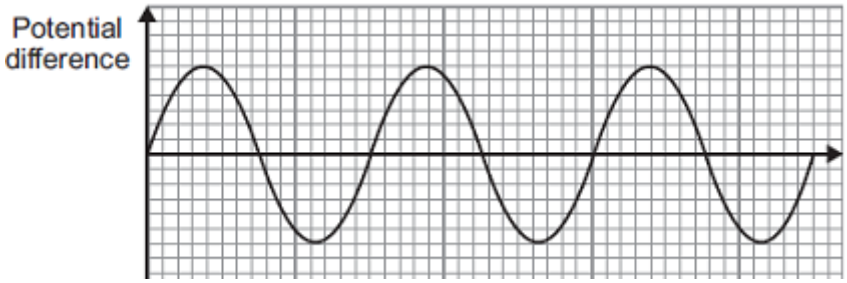
(iii) Name an instrument that could be used to measure the potential difference between **X** and **Y**.

_____

**(1)**

(b) **Graph 1** shows the output from the a.c. generator.

**Graph 1**




(i) One of the axes on **Graph 1** has been labelled 'Potential difference'.

What should the other axis be labelled?

_____

**(1)**

(ii) The direction of the magnetic field is reversed.

On **Graph 1**, draw the output from the a.c. generator if everything else remains the same.

**(2)**

(c) The number of turns of wire on the coil is increased. This increases the maximum induced potential difference.

State **two** other ways in which the maximum induced potential difference could be increased.

1. _____

_____

2. _____

_____

**(2)**

**(Total 8 marks)**

## Q2.

The current in a circuit depends on the potential difference (p.d.) provided by the cells and the total resistance of the circuit.

(a) Using the correct circuit symbols, draw a diagram to show how you would connect 1.5 V cells together to give a p.d. of 6 V.

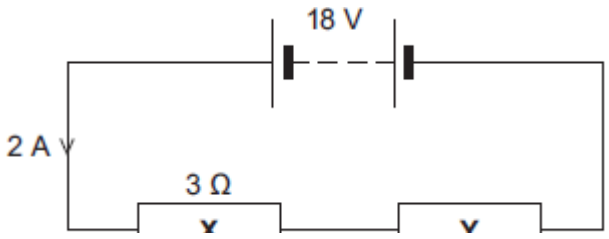
**(2)**

(b) **Figure 1** shows a circuit containing an 18 V battery.

Two resistors, **X** and **Y**, are connected in series.

- **X** has a resistance of 3 Ω.
- There is a current of 2 A in **X**.

**Figure 1**




(i) Calculate the p.d. across **X**.

P.d. across **X** = _____ V

**(2)**

(ii) Calculate the p.d. across **Y**.

P.d. across **Y** = _____ V

**(2)**

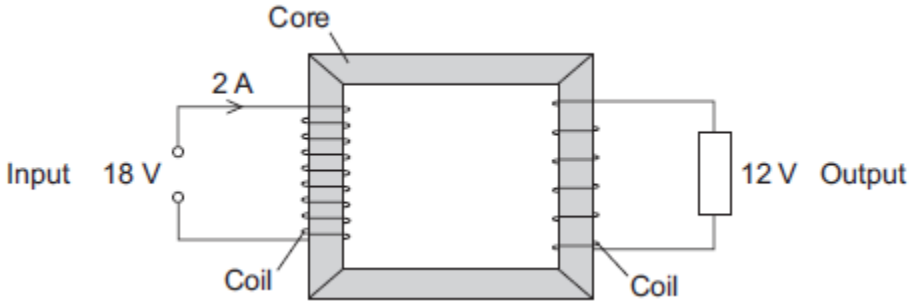
(iii) Calculate the total resistance of **X** and **Y**.

Total resistance of **X** and **Y** = _____ Ω

**(2)**

(c) **Figure 2** shows a transformer.

**Figure 2**




(i) An 18 V battery could **not** be used as the input of a transformer.

Explain why.

_____

_____

_____

**(2)**

(ii) The transformer is 100% efficient.

Calculate the output current for the transformer shown in **Figure 2**.

_____

_____

_____

Output current = _____ A

**(2)**

**(Total 12 marks)**