Name of the Student:_____
Max. Marks : 18 Marks **Time : 18 Minutes**

Q1.

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.

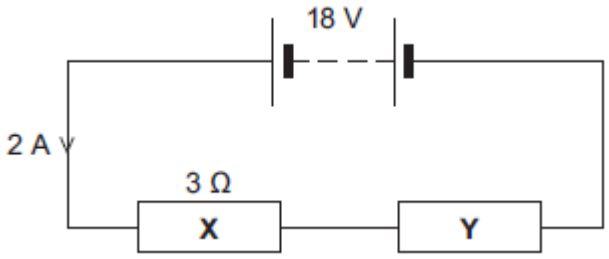
(2)

(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)

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

_____

_____

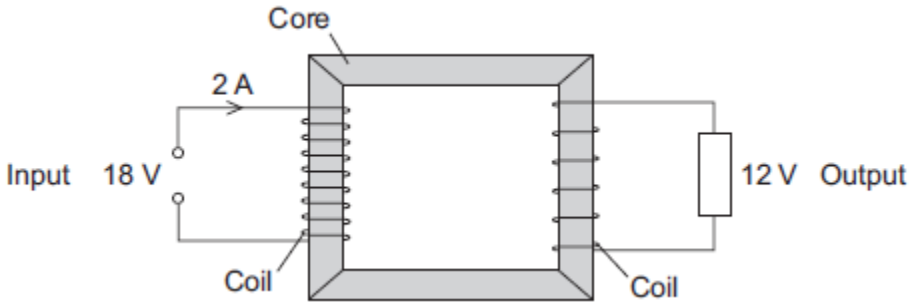
_____

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)

Q2.

In this question you will be assessed on using good English, organising information clearly and using specialist terms where appropriate.

There are two types of traditional transformer; step-up and step-down.

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Describe the similarities and differences between a step-up transformer and a step-down transformer.

You should include details of:

- construction, including materials used
- the effect the transformer has on the input potential difference (p.d.).

You should **not** draw a diagram.

Extra space

(Total 6 marks)

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