

Name of the Student: _____

Max. Marks : 22 Marks

Time : 22 Minutes

Q1.

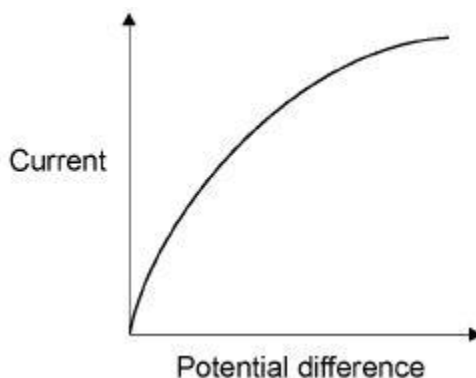
- (a) Complete the sentence. Choose answers from the box.

charge	potential difference	power	temperature	time
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The current through an ohmic conductor is directly proportional to the _____ across the component, provided that the _____ remains constant.

(2)

- (b)
- Figure 1**
- shows a current – potential difference graph for a filament lamp.

Figure 1

Explain how the resistance of a filament lamp changes as the potential difference across it increases.

(3)

- (c) Many householders are replacing their filament lamps with LED lamps which are more energy

efficient.

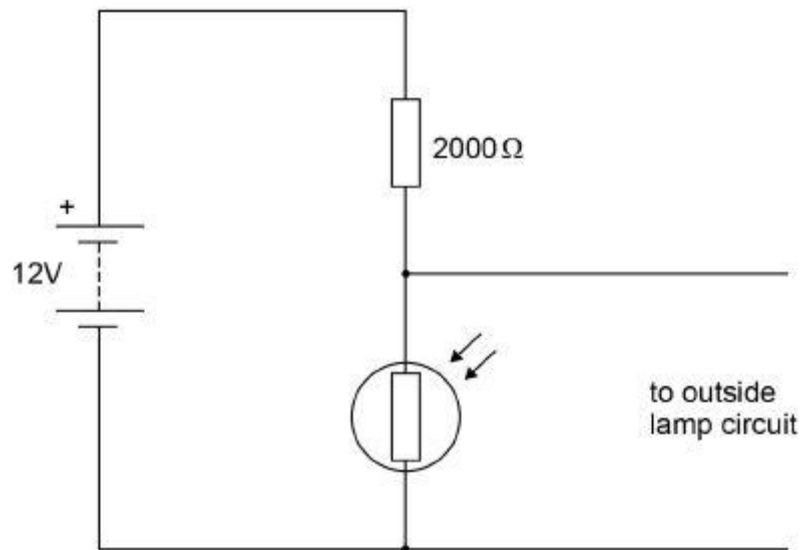
What does more energy efficient mean?

(1)

A Light Dependent Resistor (LDR) is used to turn on an outside lamp when it gets dark.

Part of the circuit is shown in **Figure 2**.

Figure 2



- (d) The light intensity decreases.

What happens to the potential difference across the LDR and the current in the LDR?

Potential difference _____

Current _____

(2)

- (e) What is the resistance of the LDR when the potential difference across it is 4 V?

Give a reason for your answer.

Explain your answer.

Resistance = _____ Ω

Reason _____

(2)

- (f) Calculate the current through the LDR when the resistance of the LDR is 5000 Ω .

Give your answer to 2 significant figures.

Current = _____ A

(4)

(Total 14 marks)

Q2.

Nuclear power stations generate electricity through nuclear fission. Electricity can also be generated by burning shale gas.

- (a) Shale gas is natural gas trapped in rocks. Shale gas can be extracted by a process called fracking. There is some evidence that fracking causes minor earthquakes. Burning shale gas adds carbon dioxide to the atmosphere.

Describe the advantages of nuclear power compared with the use of shale gas to generate electricity.

(3)

- (b) What is the name of **one** fuel used in nuclear power stations?

(1)

- (c) Describe the process of nuclear fission.

(4)
(Total 8 marks)