3.12 Mains Electricity, Power and Energy: 10-minute Pack

Total Marks

AQA 8464 · Calculator allowed · about 10 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 For each quantity below, state its SI unit.

(a) State the SI unit of electrical power. **(1)**

(b) State the SI unit of energy. **(1)**

(c) State the SI unit of electric charge. **(1)**

(Total for Question 1 is 3 marks)

2 The UK mains electricity supply has a standard frequency and potential difference.

(a) State the frequency of the UK mains supply. **(1)**

(b) State the potential difference of the UK mains supply. **(1)**

(Total for Question 2 is 2 marks)

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3 An LED lamp has an electrical power input of 50 W. It transfers 45 J of energy usefully as light every second it is used.

(a) Calculate the efficiency of the lamp. Give your answer as a percentage. **(3)**

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(b) State what happens to the rest of the energy supplied to the lamp. **(1)**

(Total for Question 3 is 4 marks)

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Mark scheme · 3.12 Mains Electricity, Power and Energy: 10-minute Pack

Question 1

(a) watt (W) **B1**

(a) Answer: Watt (W).

(b) joule (J) **B1**

(b) Answer: Joule (J).

(c) coulomb (C) **B1**

(c) Answer: Coulomb (C).

Question 2

(a) 50 Hz **B1**

(a) Answer: 50 Hz.

(b) 230 V **B1**

(b) Answer: 230 V.

Question 3

(a) efficiency = useful output energy transferred / total input energy transferred = 45/50 **M1**

(a) multiplies by 100 **M1**

(a) 90% (cao) **A1**

(a) Answer: 90%

(b) it is transferred (wasted) as heat/thermal energy to the surroundings, oe **B1**

(b) Answer: It is transferred (wasted) as heat to the surroundings.

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