

**GCSE Physics B (Twenty First Century Science)**  
**J259/04** Depth in physics (Higher Tier)

**Question Set 15**

Multiple Choice Questions

1 Kareem is researching replacement bulbs for his grandad.

He finds three types of bulbs – incandescent, compact fluorescent light (CFL) and light-emitting diode (LED).

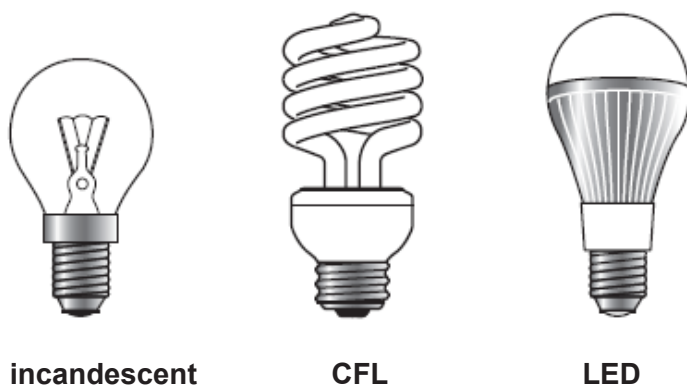


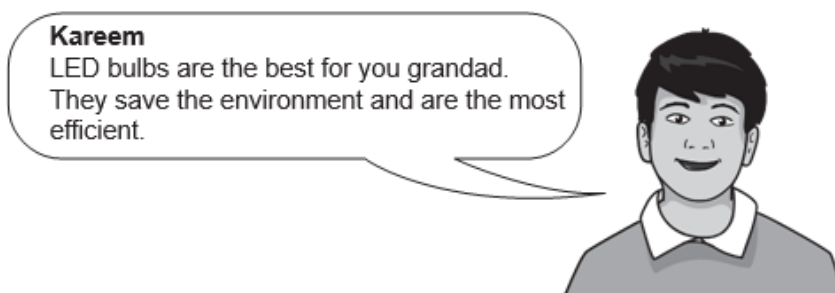
Table 6.1 shows some information on these bulbs.

	Incandescent	CFL	LED
Power (W)	60	12	8
Life span (hours)	2000	10 000	50 000
CO <sub>2</sub> emissions at power station in 50 000 hours (kg)	1600	330	220

Table 6.1

The three bulbs in Table 6.1 have the same brightness.

(a) Kareem makes the following comment about the information in Table 6.1 to his grandad.



Is Kareem correct?

Yes

No

Give **two** reasons for your answer.

[2]

- (b) Calculate the number of **incandescent** bulbs that would be required to do the same job as a single LED bulb, in 50 000 hours.

Use information from **Table 6.1**.

- Number of bulbs = ..... [2]  
(c) Calculate the total cost, in pence, of using one **LED bulb** for its lifetime.

The cost of one kWh of energy is 13p.

Use information from **Table 6.1**.

Total cost = .....pence [4]

**Total Marks for Question Set 15: 8**

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