Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic: Electricity (High Demand)

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Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Mark Schemes

Q1.

(a) d.c. flows in (only) one direction

1

a.c. changes direction (twice every cycle)
accept a.c. constantly changing direction
ignore references to frequency

1

(b) a current flows through from the live wire / metal case to the earth wire
accept a current flows from live to earth
*do **not** accept on its own if the current is too high*

1

this current causes the fuse to melt
accept blow for melt
*do **not** accept break / snap / blow up for melt*

1

[4]

Q2.

(a) (i) $efficiency = \frac{useful\ energy\ out\ (\times 100\%)}{total\ energy\ in}$

1.6 (W)

*allow **1** mark for correct substitution ie* $0.2 / \frac{20}{100} = \frac{output}{8}$

2

(ii) $efficiency = \frac{useful\ energy\ out\ (\times 100\%)}{total\ energy\ in}$

32 (%) / 0.32
or
their (a)(i) ÷ 5 correctly calculated
ignore any units

1

(b) (i) any **two** from:

- comparison over same period of time of relative numbers of bulbs

required eg over 50 000 hours 5 CFL's required to 1 LED

accept an LED lasts 5 times longer

- link number of bulbs to cost eg 5 CFL's cheaper than 1 LED

  an answer in terms of over a period of 50 000 hours CFLs cost £15.50 (to buy), LED costs £29.85 (to buy) so CFLs are cheaper scores both marks

  an answer in terms of the cost per hour (of lifetime) being cheaper for CFL scores 1 mark if then correctly calculated scores both marks

- over the same period of time LEDs cost less to operate (than CFLs)

2

(ii) any **one** from:

- price of LED bulbs will drop

  *do **not** accept they become cheaper*

- less electricity needs to be generated

  accept we will use less electricity

- less CO_2 produced

- fewer chips needed (for each LED bulb)

- fewer bulbs required (for same brightness / light)

- less energy wasted

  *do **not** accept electricity for energy*

1

[6]

Q3.

(a) (i) 2

*allow **1** mark for correct substitution i.e. 0.8 × 2.5 provided no further step shown*

2

(ii) straight line drawn from origin to 2, 0.8
or
their (a)(i), 0.8

1

curve from 2, 0.8 to 12,2
or
their (a)(i) 0.8 to 12,2

accept curve from 2, 0.9 to 12,2

or

their (a)(i) 0.9 to 12,2

'convex' curve required

accept a curve that flattens between 10 and 12V

1

(iii) filament / lamp gets hot

accept temperature increases

1

(b) 108

*allow **1** mark for correct substitution i.e. 1.5 × 72 provided no further step shown*

2

[7]