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

Mark Schemes

Q1.

(a) I = 0.08 (A)

an incorrect value of I from the graph can score all subsequent marks

1

0.230 = 0.08 × V

allow a correct substitution of an incorrectly/not converted value of P

1

$$V = \frac{0.230}{0.08}$$

allow a correct rearrangement using an incorrectly/not converted value of P

1

V = 2.875 (V)

OR

I = 0.08 (A) (1)

V = 0.08 × 36 (2)

V = 2.88 (V) (1)

OR

0.230 = I^2 × 36 (1)

I = 0.08 (A) (1)

V = 0.08 × 36 (1)

V = 2.88 (V) (1)

allow a correct calculation using an incorrectly/not converted value of P

1

(b) the product of current and resistance = a constant

1

calculation of constant (2.88) using three or more pairs of values

if no other marks scored allow for one mark a statement

Downloaded from www.merit-minds.com

that doubling one quantity (R or I) halves the other quantity

1

(c) current would be (almost) zero (in the variable resistor)

1

(because) the switch has (effectively) zero resistance
or
the potential difference across the variable resistor is (effectively) zero

the switch's resistance is much lower than the variable resistor

allow the switch creates a short circuit

1

[8]

Q2 (very high p.d. means) very low currents

1

which means less (thermal) energy is transferred to surroundings

allow less power loss in cables

1

which increases the efficiency of power transmission

1

(b) electric field strength is very high

1

causing the air to become ionised

allow the air breaks down

allow the air becomes a conductor

allow the air conducts charge

1

(the kite / string) conducts charge to the person / earth

ignore answers referring to the kite touching the power cables

1

(c) straight line passing through the origin

1

line drawn below existing line for all values

1

(d) the potential difference across the wires/cable is the same

1

(but) the resistance of the steel wire is greater (and so less current in the steel)

1

[10]

Downloaded from www.merit-minds.com