Name of the Student:_____
Max. Marks : 19 Marks **Time : 19 Minutes**

Mark Schemes

Q1.

(a) (because the) potential of the live wire is 230 V **1**

(and the) potential of the electrician is 0 V **1**

(so there is a) large potential difference between live wire and electrician **1**

charge / current passes through his body
allow voltage for potential difference **1**

(b) diameter between 3.50 and 3.55 (mm)
*allow correct use of value of cross-sectional area of 9.5 to 9.9 (mm^2) with no final answer given for **1** mark* **2**

(c) $18000 = I \times 300$ **1**

$I = 18000 / 300 = 60$ **1**

$13\ 800 = (60^2) \times R$ **1**

$R = 13\ 800 / 60^2$ **1**

3.83 (Ω) **1**

*allow 3.83(Ω) with no working shown for **5** marks*
answer may also be correctly calculated using P = IV and V = IR if 230 V is used.

[11]

Q2.

(a) (i) 1.7 **1**

(ii) 51
or
30 × their (i) correctly calculated

$= \frac{Q}{30}$

*allow **1** mark for correct substitution i.e. 1.7* $= \frac{Q}{30}$

or their (i)

2

coulomb / C

*do **not** accept c*

1

(iii) 612

or

their (ii) × 12 correctly calculated

or

their (i) × 360 correctly calculated

*allow **1** mark for correct substitution i.e. E = 12 × 51*

or 12 × their (ii)

or their (i) × 360

2

(b) ions vibrate faster

or

ions vibrate with a bigger amplitude

accept atoms for ions throughout

accept ions gain energy

accept ions vibrate more

ions start to vibrate is insufficient

1

electrons collide more (frequently) with the ions

or

(drift) velocity of electrons decreases

electrons start to collide is insufficient

there are more collisions is insufficient, unless both electrons and ions are implied

1

[8]