

Name of the Student: _____

Max. Marks : 19 Marks

Time : 19 Minutes

Mark Schemes

Q1.

(a) 35

an answer with more than 2 sig figs that rounds to 35 gains 2 marks

allow 2 marks for correct method, ie $\frac{230}{6.5}$

allow 1 mark for $I = 6.5$ (A) or $R = \frac{230}{26}$

an answer 8.8 gains 2 marks

an answer with more than 2 sig figs that rounds to 8.8 gains 1 mark

3

(b) (maximum) current exceeds maximum safe current for a 2.5 mm² wire
accept power exceeds maximum safe power for a 2.5 mm² wire

or

(maximum) current exceeds 20 (A)

(maximum) current = 26 (A) is insufficient

1

a 2.5 mm² wire would overheat / melt

accept socket for wire

*do **not** accept plug for wire*

1

(c) a.c. is constantly changing direction
accept a.c. flows in two directions
accept a.c. changes direction

a.c. travels in different directions is insufficient

1

d.c. flows in one direction only

1

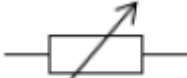
[7]

Q2.

(a) (i) symbol for a diode



1

symbol for a variable resistor 

1

(ii) voltmeter is in series **or** voltmeter is not in parallel

1

ammeter is in parallel **or** ammeter is not in series

*accept an answer in terms of how the circuit should be corrected
voltmeter and ammeter are wrong way around is insufficient*

1

(b) (i) 0.2 (V)

accept any value between 0.20 and 0.21 inclusive

1

(ii) 37.5

allow 1 mark for $I = 0.008$

or

allow 2 marks for correct substitution, ie $0.3 = 0.008 \times R$

or

*allow 1 mark for a correct substitution using $I = 0.8$ **or** $I = 0.08$*

or $I = 0.009$

or

*allow 2 marks for answers of 0.375 **or** 3.75 **or** 33(.3)*

3

(c) (i) 25

allow 1 mark for obtaining period = 0.04(s)

2

(ii) diode has large resistance in reverse / one direction

1

so stops current flow in that / one direction

allow diodes only let current flow one way / direction

allow 1 mark for the diode has half-rectified the (a.c. power) supply

1

[12]