Practice Question Set For A-Level
Subject : Physics
Paper-1 Topic: Electricity

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

Mark Schemes

Q1.

(a) Correct substitution into P=VI
1.74 (A)

2

(b) (i) Correct substitution into R=V/I or V^2/P or P/I^2
264 (Ω)
Allow correct use of parallel resistor equation

2

(ii) Use of $1/R_T = 1/R_1 + 1/R_2$ or $R = V^2/P$
65 (66.1) (Ω)

2

(iii) $A = \pi(1.5 \times 10^{-4})^2/4$ or $\pi(7.5 \times 10^{-5})^2$ or 1.767×10^{-8} (m^2)
Substitution into $l=RA/\rho$ with their area
4.2 (4.18) (m)
2 marks for 17 (m), using of d instead of r

3

(c) Resistivity / resistance increases with increasing temperature
(Lattice) ions vibrate with greater amplitude
Rate of movement of charge carriers / electrons (along wire) reduced (for given pd)
ORA
Condone atoms for ions.
Accept "vibrate more".
Accept more frequent collisions occur between electrons and ions owtte

3

(d) $2.9 \times 10^{-3}/447$ or $2.9 \times 10^{-3}/174$ seen
$6.5\ (6.49) \times 10^{-6}$ (m)
Correct answer given to 2 sig fig
Condone use of 174 for T for C1 and B1 marks
Allow 3 sig fig answer if 2.90×10^{-3} used

3

[15]

Q2.

(a) work done per unit charge

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Allow V=W/Q if W and Q defined

1

(b) Voltmeter reading / terminal pd drops
Battery has internal resistance
pd occurs within battery / 'lost volts' within battery / emf is shared between internal and external resistances

3

[4]

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