

Multiple Choice Answers

Q33: A

Multiple Choice Answers

Q33: B

Multiple Choice Answers

Q32: A

Q34: D

5(a)(i)	potential difference per unit current
5(a)(ii)	resistor connected to cell in a closed loop and correct circuit symbols used for all components
	ammeter connected in series with resistor and voltmeter connected in parallel with resistor
5(b)(i)	(resistance) = $1.38 / 0.276 = 5.00 \text{ } (\Omega)$
5(b)(ii)	$\rho = RA / L$
	$\rho = 5.00 \times \pi \times (0.496 \times 10^{-3})^2 / (4 \times 0.864)$
	$= 1.12 \times 10^{-6} \text{ } \Omega \text{ m}$
5(b)(iii)	calculation of a fractional or percentage uncertainty in one quantity
	0.001 / 0.864 or 0.002 / 0.496 or 0.02 / 1.38 or 0.001 / 0.276
	percentage uncertainty = $[(0.001 / 0.864) + (2 \times 0.002 / 0.496) + (0.02 / 1.38) + (0.001 / 0.276)] \times 100$ $= 2.7\%$
5(b)(iv)	$\Delta \rho = 0.03 \times 1.12 \times 10^{-6}$ $= 3 \times 10^{-8} \text{ } \Omega \text{ m}$

Multiple Choice Answers

Q32: C

Q33: D

Q35: A

Multiple Choice Answers

Q33: D

Multiple Choice Answers

Q34: D

7(a)	$R = \rho L / A$
	$= (1.12 \times 10^{-6} \times 1.5) / 2.45 \times 10^{-7}$
	$= 6.86 \text{ } \Omega$
7(b)(i)	(A method where the) reading (on the galvanometer) is zero.
7(b)(ii)	e.m.f. / 1.2 = 64 / 150
	e.m.f. = $(64 / 150) \times 1.2$
	$= 0.51 \text{ V}$
7(b)(iii)	(the internal resistance will cause a) drop in p.d. across the wire / the terminal p.d. is lower
	So the null point will move to the right

5(a)(i)	temperature decreases, resistance decreases
5(a)(ii)	line from origin with decreasing gradient drawn in first quadrant or line from origin with decreasing gradient drawn in third quadrant
	line drawn in the third or first quadrant of similar composition (straight line from origin followed by correct curve) and similar size as compared by eye to the first line
5(b)(i)	$E = P / I$ $= 18 / 1.5$
	$= 12 \text{ V}$
5(b)(ii)	$I = 3.3 - 1.5$ $= 1.8$
	$I = Anvq$ $1.8 = 1.4 \times 10^{-9} \times 3.4 \times 10^{28} \times v \times 1.6 \times 10^{-19}$
	$v = 0.24 \text{ m s}^{-1}$