

Question	Answer	Marks	AO Element	Notes	Guidance
1	6(.0) (V) (1) 0.40×15 (1) $(V =) I \times R$ OR $R = V / I$	3			
2	150 A (1) $I = P/V$ in any form OR 1.8/12 OR 1800/12 OR 0.15 (1)	2			
3(a)	4.8 V	1			
3(b)	20 Ω (1) $1 / R_T = 1 / R_1 + 1 / R_2$ OR $(R_T =) R_1 R_2 / (R_1 + R_2)$ OR $1 / R_T = 1/24 + 1/12$ OR $1 / R_T = 3/24$ OR $(R_T =) 24 \times 12 / (24 + 12)$ (1) 8.0 (Ω) (1)	3			
3(c)	2.9V (1) $V = ER / R_T$ in any form OR $4.8 \times 12/20$ OR $I = E / R$ in any form OR 0.24 seen (1)	2			
4	both relate to energy per unit charge	1			

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5	small(er) resistance mentioned (1) less thermal energy produced OR wires do not melt OR large current mentioned (1)	2			
6	e.m.f. applies to the whole circuit / source OR p.d. applies to one (or more) component OR energy conversion to electrical for e.m.f / from electrical for p.d.	1			
7(a)	0.26 (A)	1			
7(b)	5.4 (Ω) (1) $1.4 \div 0.26$ (1) $V = IR$ OR $(R =) V \div I$ (1)	3			
8	electromotive force / e. m. f. / potential difference / p. d. / voltage	1			
[Total: 20]					