<table>
<tr><th>Question Number</th><th>Answer</th><th>Mark</th></tr>
<tr><td>*15a</td><td>
This question assesses a student's ability to show a coherent and logically structured answer with linkages and fully-sustained reasoning. Marks are awarded for indicative content and for how the answer is structured and shows lines of reasoning. The following table shows how the marks should be awarded for indicative content.
<table>
<tr><th>IC points</th><th>IC mark</th><th>Max linkage mark</th><th>Max final mark</th></tr>
<tr><td>6</td><td>4</td><td>2</td><td>6</td></tr>
<tr><td>5</td><td>3</td><td>2</td><td>5</td></tr>
<tr><td>4</td><td>3</td><td>1</td><td>4</td></tr>
<tr><td>3</td><td>2</td><td>1</td><td>3</td></tr>
<tr><td>2</td><td>2</td><td>0</td><td>2</td></tr>
<tr><td>1</td><td>1</td><td>0</td><td>1</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0</td></tr>
</table>
The following table shows how the marks should be awarded for structure and lines of reasoning.
<table>
<tr><th></th><th>Number of marks awarded for structure of answer and sustained line of reasoning</th></tr>
<tr><td>Answer shows a coherent and logical structure with linkages and fully sustained lines of reasoning demonstrated throughout</td><td>2</td></tr>
<tr><td>Answer is partially structured with some linkages and lines of reasoning</td><td>1</td></tr>
<tr><td>Answer has no linkages between points and is unstructured</td><td>0</td></tr>
</table>
Indicative content

Current is the rate of flow of charge
Current is the same at all points in a series circuit
Or current in C = current in cell.
total current going into a junction = total current out of junction
Or current in C/cell = current in A + current in B
Or current splits (equally) between A and B
p.d. is energy transferred per unit charge
p.d is shared between components in series
Or p.d. across C + p.d. across A = e.m.f. of cell
Or p.d. across C + p.d. across B = e.m.f. of cell
Or p.d. across C + p.d. across A/B combination = e.m.f. of cell
p.d. is the same across components in parallel
Or p.d. across A is the same as that across B

</td><td>6</td></tr>
</table>

15bi	Use of resistors in parallel formula Use of resistors in series formula Total resistance = 18.8 Ω (Allow MP1 for use of R^2 / $2R$) Example of calculation For parallel section, $\frac{1}{R_P} = \frac{1}{12.5\Omega} + \frac{1}{12.5\Omega}$ so $R_P = 6.25\Omega$ $R_{total} = 6.25\Omega + 12.5\Omega = 18.75\Omega$.	(1) (1) (1)	**3**
15bii	Equation for sum of p.d. = sum of e.m.f. seen e.g. $\varepsilon = IR + Ir$ Rearranged to make r the subject of the formula e.g. $r = \frac{\varepsilon}{I} - R$ Ammeter labelled anywhere on series part of circuit **Or** Terminal p.d. calculated using IR Subtract from ε and divide by ammeter reading Ammeter labelled anywhere on series part of circuit **Or** ε divided by ammeter reading Subtract answer for (b)(i) from this value Ammeter labelled anywhere on series part of circuit	(1) (1) (1) (1) (1) (1) (1) (1) (1)	**3**
	Total for question 15		**12**