

Question Number	Answer	Mark
13 (a)	<p>Use of <math>R = V/I</math></p> <p><b>Or</b> Equates ratio of resistances to ratio of p.d.s (1)</p> <p><math>R = 1300 \Omega</math> (1)</p> <p><u>Example of calculation</u></p> <p>Whole circuit current = <math>V/R = 1.19 \text{ V} / 5000 \Omega = 2.38 \times 10^{-4} \text{ A}</math></p> <p><math>R</math> (of LDR) = <math>V/I = (0.31 \text{ V}) / (2.38 \times 10^{-4} \text{ A}) = 1300 \Omega</math></p>	2
13(b)	<p>Calculates p.d. across fixed resistor as 1.497V (1)</p> <p>Difference between 1.50 and 1.497 is less than 0.01V (1)</p> <p><b>OR</b></p> <p>Calculates p.d across the LDR as 0.003 V (1)</p> <p><math>0.003 &lt; 0.01\text{V}</math> (1)</p> <p><b>OR</b></p> <p>As resistance of the LDR decreases, the voltmeter reading increases (1)</p> <p>p.d. across the LDR becomes less than 0.01 V (1)</p> <p><b>OR</b></p> <p>Ratio of resistor resistance to LDR resistance becomes very high (1)</p> <p>p.d. across the LDR becomes less than 0.01 V (1)</p> <p>(Do not allow MP1 for use of <math>V = IR</math> with current value calculated in (a))</p> <p>(3<sup>rd</sup> or 4<sup>th</sup> methods – allow “there is hardly any p.d. across the LDR”)</p> <p>(For all MP, allow “resolution of the voltmeter” for “0.01V”)</p> <p>(For MP1 via 3<sup>rd</sup> method, allow “p.d. across (fixed) resistor increases” for “the voltmeter reading increases”)</p>	2
<b>Total for Question 13</b>		<b>4</b>