

**Eduqas Physics GCSE**  
**Topic 10.2: Red shift as**  
**sources move away**  
**Mark Schemes for Questions**  
**by topic**

1.

Question Number	Answer	Acceptable answers	Mark
<b>1(a)(iii)</b>	change in the (observed) frequency <b>or</b> wavelength of light/radiation (received from a distant galaxy)	<p>light/absorption lines is/are shifted toward red end of spectrum</p> <p>light/radiation has longer wavelength/lower frequency</p> <p>waves are more spread out/stretched</p> <p>Ignore references to sound or colour of light eg galaxies/light appear(s) red(er)</p>	<b>(1)</b>
Question Number	Answer	Acceptable answers	Mark
<b>1(a)(iv)</b>	<p>An explanation linking the following:-</p> <p>It/the Universe is expanding (1)</p> <p>some galaxies are (moving)faster (than others) (1)</p>	<p>they/ galaxies are moving further/away (from the Earth/us)</p> <p>the further away the galaxy is the greater the red-shift/the faster the galaxy is moving</p> <p>(some galaxies) are moving away faster (than others) gains 2 marks</p> <p>IGNORE references to planets/stars</p>	<b>(2)</b>

2.

Question Number	Answer	Acceptable answers	Mark
<b>6(b)(i)</b>	A description including: <ul style="list-style-type: none"> <li>• change in wavelength / frequency (1)</li> <li>• Correct change(s) (1)</li> </ul>	wavelength increases (2) frequency decreases (2)	<b>(2)</b>

Question Number	Answer	Acceptable answers	Mark
<b>6(b)(ii)</b>	An explanation linking <b>two</b> of the following points <ul style="list-style-type: none"> <li>• red shift (1)</li> <li>• universe expanding (1)</li> <li>• (cosmic) microwave (background)(radiation) (1)</li> </ul>	Accept initials (eg CMB)	<b>(2)</b>

3.

Question Number	Answer	Acceptable answers	Mark
<b>3(b)</b>	An explanation linking any two of (presence of Earth's ) atmosphere (1) causes light to be absorbed/reduced in intensity (1) causes distortion of the image(1) (more) <b>light</b> pollution (1) (bigger) variations in temperature (1)	Accept reverse argument (more) air/ clouds/ pollution/ dust blocked / (more) difficult to see through blurs the image / refracts the light	<b>(2)</b>

Question Number	Answer	Acceptable answers	Mark
<b>3(c)</b>	<p>An explanation linking any three of</p> <p>galaxies moving (1)</p> <p>away from Earth / Sun (1)</p> <p>galaxy 2 (moving away) faster (than galaxy 1) (1)</p> <p>galaxy 2 is (likely to be) most distant galaxy (1)</p>	galaxies are (moving) at different speeds / away from each other / universe is expanding	<b>(3)</b>

4.

Question number	Answer	Mark
<b>3(a)(i)</b>	<p>An explanation that combines identification via a judgement (1 mark) to reach a conclusion via justification/reasoning (2 marks):</p> <ul style="list-style-type: none"> <li>galaxy C has the greatest red shift (1)</li> <li>so this galaxy has the greatest speed (1)</li> <li>since the galaxy with the greatest speed will be furthest away, then galaxy C is at the furthest distance(1)</li> </ul>	<b>(3)</b>