<table>
<tr><th>Question number</th><th>Answer</th><th>Notes</th><th>Marks</th></tr>
<tr><td>1 (a)</td><td>
<table>
<tr><th>Observation</th><th>Supports the Big Bang theory</th></tr>
<tr><td>Black holes are formed from extremely massive stars</td><td></td></tr>
<tr><td>Cosmic microwave background radiation is seen in all directions</td><td>✓</td></tr>
<tr><td>Cosmic rays from space are detected at the Earth's surface</td><td></td></tr>
<tr><td>Each galaxy contains billions of stars</td><td></td></tr>
<tr><td>Most galaxies show a red-shift in the light detected from them</td><td>✓</td></tr>
</table>
1 mark for each correct tick;
-1 for each additional tick if more than two ticks seen
5 ticks scores zero</td><td></td><td>2</td></tr>
<tr><td>(b)</td><td>B (decreases, increases);

A is incorrect because a red giant is more powerful than a main sequence star
C is incorrect because a red giant is cooler and more powerful than a main sequence star
D is incorrect because a red giant is cooler than a main sequence star</td><td></td><td>1</td></tr>
<tr><td>(c)</td><td>the brightness/luminosity (of an object);
idea of a standard distance;</td><td>allow 10 parsecs/32(.6) light years
condone incorrect distance</td><td>2</td></tr>
</table>

Total for Question 1 = 5 marks