<table>
<tr><th>Question number</th><th>Answer</th><th>Notes</th><th>Marks</th></tr>
<tr><td>7 (a)</td><td>C and D ticked with A and F unticked = 1 mark;
all of B, C, D and E ticked with A and F unticked = 2 marks;;
<table>
<tr><th>Sound wave</th><th>Frequency in Hz</th><th>Can be heard by humans</th></tr>
<tr><td>A</td><td>10</td><td></td></tr>
<tr><td>B</td><td>30</td><td>✓</td></tr>
<tr><td>C</td><td>500</td><td>✓</td></tr>
<tr><td>D</td><td>2000</td><td>✓</td></tr>
<tr><td>E</td><td>10 000</td><td>✓</td></tr>
<tr><td>F</td><td>25 000</td><td></td></tr>
</table></td><td>if either A or F ticked then award 0 marks</td><td>2</td></tr>
<tr><td>(b)</td><td>wave drawn with lower amplitude throughout;

wave drawn with lower frequency throughout;</td><td>ignore vertical position of wave in the grid
peak to peak should be less than 4 squares
vertically throughout trace should be less than 2½ waves in the trace</td><td>2</td></tr>
<tr><td>(c) (i)</td><td>conversion of temperature into kelvin;

substitution and evaluation;

e.g.
temperature = 46 + 273 = 319 K
speed = (0.606 × 319) + 166 = 360 (m/s)</td><td>allow 319 seen anywhere in working
apply ecf if 46 used as kelvin temperature giving 194, 193.9, 193.876 (m/s) for 1 mark

allow 359, 359.3… (m/s)</td><td>2</td></tr>
<tr><td>(ii)</td><td>substitution into speed = frequency × wavelength;
rearrangement;
evaluation;

e.g.
360 = 15 000 × wavelength
wavelength = 360 / 15 000
(wavelength =) 0.024 (m)</td><td>allow ecf from (i)

use of 194 (m/s) from (i) gives an answer of 0.013 (m)
answer of 0.023 gets 2 marks only

allow 0.02, 0.0239… (m)</td><td>3</td></tr>
</table>

Total for Question 7 = 9 marks