<table>
<tr><th>Question Number</th><th>Scheme</th><th>Notes</th><th>Marks</th></tr>
<tr><td>2</td><td>H_0 : Diet and health are independent (or not associated).
H_1 : Diet and health are not independent (or associated).</td><td>“diet” and “health” mentioned at least once. Use of correlation is B0.</td><td>B1</td></tr>
<tr><td></td><td>
<table>
<tr><th>EXPECTED</th><th>Good health</th><th>Poor health</th><th>Totals</th></tr>
<tr><td>Good diet</td><td>83.19</td><td>10.81</td><td>94</td></tr>
<tr><td>Poor diet</td><td>93.81</td><td>12.19</td><td>106</td></tr>
<tr><td>Totals</td><td>177</td><td>23</td><td>200</td></tr>
</table>
</td><td>Attempt $\frac{\text{RT}\times\text{CT}}{\text{GT}}$
with at least one correct to 1dp;
all correct to 1dp.</td><td>M1;
A1</td></tr>
<tr><td></td><td>
<table>
<tr><td>Observed</td><td>Expected</td><td>$\frac{(O-E)^2}{E}$</td><td>$\frac{O^2}{E}$</td></tr>
<tr><td>86</td><td>83.19</td><td>0.095</td><td>88.905</td></tr>
<tr><td>8</td><td>10.81</td><td>0.730</td><td>5.920</td></tr>
<tr><td>91</td><td>93.81</td><td>0.084</td><td>88.274</td></tr>
<tr><td>15</td><td>12.19</td><td>0.648</td><td>18.458</td></tr>
<tr><td colspan="2">Totals</td><td>1.557</td><td>201.557</td></tr>
</table>
</td><td>Attempt at $\frac{(O-E)^2}{E}$
or $\frac{O^2}{E}$ with their values with 2 correct or 2 correct f.t.
Allow 2sf for this mark.</td><td>M1</td></tr>
<tr><td></td><td>$\sum\frac{(O-E)^2}{E}$ or $\sum\frac{O^2}{E}-200=1.557$</td><td>awrt 1.6</td><td>A1</td></tr>
<tr><td></td><td>$\nu=(2-1)(2-1)=1$
$\chi^2_1(5\%)=3.841$</td><td>1 (may be implied)
3.841
NB: may see $\chi^2_3(5\%)=7.815$ for f.t.
NB: p-value 0.212 but scores B0B0 on its own</td><td>B1
B1f.t.</td></tr>
<tr><td></td><td>$\chi^2=1.557$ does not lie in cr so insufficient evidence to reject H_0</td><td>For correct non-contextual statement linking their test statistic and their cv.</td><td>M1</td></tr>
<tr><td></td><td>E.g. Diet and health are independent or
There is no association between diet and health or
The doctor’s belief is not supported by this data.</td><td>Dependent on a cv of 3.841 and 3rd M1
Correct conclusion in context with “diet” and “health” or “doctor”. Condone “connection” or “relationship” but not “correlation”.</td><td>A1ft</td></tr>
<tr><td></td><td></td><td></td><td>(9)</td></tr>
<tr><td></td><td></td><td></td><td>Total 9</td></tr>
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