QUESTION 3.2

(a) (i) $\frac{100}{400}\left(\frac{1}{4}, 0.25, 25\,\%\right)$ ***(A1)***

(ii) $\frac{90}{400}\left(\frac{9}{40}, 0.225, 22.5\,\%\right)$ ***(A1)***

(iii) $\frac{20}{400}\left(\frac{1}{20}, 0.05, 5\,\%\right)$ ***(A1)(A1)***

Note: Award ***(A1)*** for numerator, ***(A1)*** for denominator.

(iv) $\frac{120}{400}\left(\frac{3}{10}, 0.3, 30\,\%\right)$ ***(A1)(A1)***

Note: Award ***(A1)*** for numerator, ***(A1)*** for denominator.

(v) $\frac{30}{110}\left(\frac{3}{11}, 0.273, 27.3\,\%\right)$ $(0.272727\ldots)$ ***(A1)(A1)*** ***[8 marks]***

Note: Award ***(A1)*** for numerator, ***(A1)*** for denominator. Accept 0.27, do not accept 0.272, do not accept 0.3.

(b) $\frac{1}{20} \neq \frac{1}{4} \times \frac{9}{40}$ ***(R1)*****(ft)**

Note: The fractions must be used as part of the reason.
Follow through from (a)(i), (a)(ii) and (a)(iii).

Pam is not correct ***(A1)*****(ft)** ***[2 marks]***

Notes: Do not award ***(R0)(A1)***.
Accept the events are not independent (dependent).

continued…

Question 3.2 continued

(c) (i) The mathematics course and language of examination are independent. ***(A1)***

Notes: Accept "There is no association between Mathematics course and language".
Do not accept "not related", "not correlated", "not influenced".

(ii) $\frac{110}{400}\times\frac{150}{400}\times 400 \left(=\frac{110\times 150}{400}\right)$ ***(M1)***

$=41.25$ ***(A1)***

$=41.3$ ***(AG)*** ***[3 marks]***

Note: 41.25 **and** 41.3 must be seen to award final ***(A1)***.

(d) (i) 7.67 (7.67003…) ***(G2)***

Note: Accept 7.7, do not accept 8 or 7.6.
Award ***(G1)*** if formula with all nine terms seen but their answer is not one of those above.

(ii) 4 ***(G1)***

(iii) 9.488 ***(A1)*****(ft)** ***[4 marks]***

Notes: Accept 9.49 or 9.5, do not accept 9.4 or 9.
Follow through from their degrees of freedom.

(e) $7.67 < 9.488$ ***(R1)***

OR

$p = 0.104\ldots,\ p > 0.05$ ***(R1)***

Accept (Do not reject) H_0 (Pam's belief is correct) ***(A1)*****(ft)** ***[2 marks]***

Notes: Follow through from part (d). Do not award ***(R0)(A1)***.

Total ***[19 marks]***