

| Questi      | Scheme  | Marks | AOs  |
|-------------|---|-------|------|
| <b>5(a)</b> | $[u =] 0.23$  | B1    | 1.1b |
|             |   | (1)   |      |
| <b>(b)</b>  | $p + q + s + t = 0.55$ <b>and</b> $r + 0.55 + u = 1$  | M1    | 3.1a |
|             | $[r =] 0.22$  | A1    | 1.1b |
|             |   | (2)   |      |
| <b>(c)</b>  | $q + s = 0.18$  | M1    | 2.2a |
|             | $P(B) = "0.22" + 0.18$ $P(A) = "0.22" + 0.18 - 0.1$ <b>and</b><br>$P(A \text{ and } B) = 0.3 \times 0.4 = 0.12$ | M1    | 2.1  |
|             | $q = 0.12$ and $s = 0.06$   | A1    | 1.1b |
|             | $p = 0.18$ and $t = 0.19$   | A1    | 1.1b |
|             |   | (4)   |      |

**(7 marks)**

**Notes**

**Mark parts (a), (b) and (c) together**

**(a)**

**B1:** 0.23 oe

**(b)**

**M1:** For realising  $P(A) + P(C) = p + q + s + t = 0.55$  **and**  $r + 0.55 + "their u" = 1$

**A1:** 0.22 oe

**(c)**

**M1:** Writing or using  $q + s = 0.18$  (implied by "their  $q$ " + "their  $s$ " = 0.18)  
implied by  $P(B) = 0.4$

**M1:** Use of 4<sup>th</sup> **and** 5<sup>th</sup> bullet points:

For 4<sup>th</sup> bullet point accept:

- $P(A) \times P(B) = P(A \text{ and } B)$
- $P(A) \times P(B) = q$  (may see substitution of their values)
- $(p + q) \times (q + r + s) = q$  (may see substitution of their values)

For 5<sup>th</sup> bullet point accept:

- $P(A) = 0.3$  and  $P(B) = 0.4$
- $(q + r + s) = (p + q) + 0.1$  (may see substitution of their values)
- $P(B) = "their r" + 0.18$  and  $P(A) = "their r" + 0.08$

Correct values for  $q$  and  $s$  imply M1M1

**A1:**  $q = 0.12$  oe and  $s = 0.06$  oe

**A1:**  $p = 0.18$  oe and  $t = 0.19$  oe