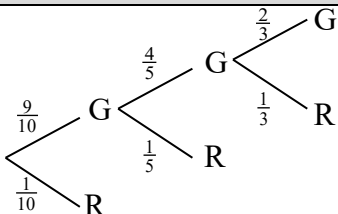


| Question | Scheme | Marks | AOs |
|----------|---|-------|------|
| 1(a) |  | B1 | 1.1b |
| | | dB1 | 1.1b |
| | | (2) | |
| (b) | $\frac{9}{10} \times \frac{4}{5} \times \frac{2}{3}$ | M1 | 1.1b |
| | $= \frac{12}{25} (= 0.48)$ | A1 | 1.1b |
| | | (2) | |
| (c) | $\frac{9}{10} \times \frac{1}{5} + \frac{9}{10} \times \frac{4}{5} \times \frac{1}{3}$ or $1 - \left(\frac{1}{10} + \frac{9}{10} \times \frac{4}{5} \times \frac{2}{3} \right)$ | M1 | 3.1b |
| | $= \frac{21}{50} (= 0.42)$ | A1 | 1.1b |
| | | (2) | |
| (d) | $[P(\text{Red from } B \text{Red selected})] = \frac{\frac{9}{10} \times \frac{1}{5}}{\frac{1}{10} + \frac{9}{10} \times \frac{1}{5} + \frac{9}{10} \times \frac{4}{5} \times \frac{1}{3}} \left[= \frac{\frac{9}{50}}{\frac{13}{25}} \right]$ | M1 | 3.1b |
| | $= \frac{9}{26}$ | A1 | 1.1b |
| | | (2) | |

(8 marks)

| Notes | | | |
|-------|---|--|--|
| | Allow decimals or percentages throughout this question. | | |
| (a) | B1: for correct shape (3 pairs) and at least one label on at least two pairs G(reen) and R(ed) allow G and G' or R and R' as labels, etc. condone 'extra' pairs if they are labelled with a probability of 0 dB1: (dep on previous B1) all correct i.e. for all 6 correct probabilities on the correct branches with at least one label on each pair | | |
| (b) | M1: Multiplication of 3 correct probabilities (allow ft from their tree diagram) A1: $\frac{12}{25}$ oe | | |
| (c) | M1: Either addition of only two correct products (product of two probs + product of three probs) which may ft from their tree diagram or for $1 - (' \frac{1}{10} ' + '(b) ')$ A1: $\frac{21}{50}$ oe | | |
| (d) | M1: Correct ratio of probabilities or correct ft ratio of probabilities e.g. $\frac{' \frac{9}{10} ' \times ' \frac{1}{5} '}{1 - '(b) '}$ or $\frac{' \frac{9}{10} ' \times ' \frac{1}{5} '}{' \frac{1}{10} ' + '(c) '}$ with num < den A1: $\frac{9}{26}$ (allow awrt 0.346) | | |