

LC 2016 (SET A): PAPER 2

QUESTION 5 (25 MARKS)

Question 5 (a) (i)

	Way 1	Way 2	Way 3	Way 4
John	✓	✓	×	✓
David	✓	×	✓	✓
Mike	×	✓	✓	✓

✓ = Hit × = Miss

Question 5 (a) (ii)

John: $P(\text{Hit}) = \frac{1}{5}$, $P(\text{Miss}) = \frac{4}{5}$

David: $P(\text{Hit}) = \frac{1}{6}$, $P(\text{Miss}) = \frac{5}{6}$

Mike: $P(\text{Hit}) = \frac{1}{4}$, $P(\text{Miss}) = \frac{3}{4}$

$P(\text{Win}) = P(\text{Way 1}) \text{ or } P(\text{Way 2}) \text{ or } P(\text{Way 3}) \text{ or } P(\text{Way 4})$

$$= \frac{1}{5} \times \frac{1}{6} \times \frac{3}{4} + \frac{1}{5} \times \frac{5}{6} \times \frac{1}{4} + \frac{4}{5} \times \frac{1}{6} \times \frac{1}{4} + \frac{1}{5} \times \frac{1}{6} \times \frac{1}{4}$$

$$= \frac{13}{120}$$

MARKING SCHEME NOTES

Question 5 (a) (i) [Scale 5B (0, 2, 5)]

2: • 1 correct column

Question 5 (a) (ii) [Scale 10C (0, 3, 7, 10)]

3: • one correct triple (numerical or descriptive)

• probability of any one *Miss*

7: • 4 correct triples (numerical)

Question 5 (b)

$P(A \cap B) = 0.1$

$P(B \setminus A) = 0.3$

$P(A \setminus B) = x$

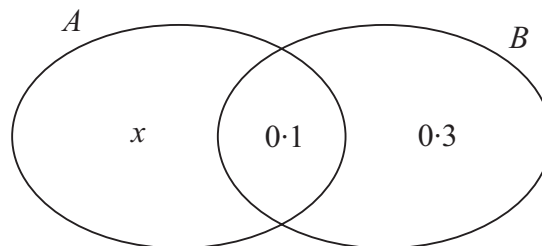
$P(A) = x + 0.1$

$P(B) = 0.4$

$$P(A|B) = \frac{P(A \cap B)}{P(B)} = \frac{0.1}{0.4} = 0.25$$

$P(A|B) = P(A)$ [A and B independent]

$\therefore 0.25 = x + 0.1 \Rightarrow x = 0.15$



MARKING SCHEME NOTES

Question 5 (b) [Scale 10C (0, 3, 7, 10)]

3: • formula written or implied

• writes $P(A) = x + 0.1$

7: • formula fully substituted