

## SAMPLE PAPER 7: PAPER 2

### QUESTION 4 (25 MARKS)

A spinner has nine equal segments numbered 1, 2, 3, 4, 5, 6, 7, 8 and 9 (Nine numbers)

Blue: 2, 3, 6, 8, 9 (Five numbers)

Red: 1, 4, 5, 7 (Four numbers)

$E$  is the event that the pointer lands on an even number.

$E$ : 2, 4, 6, 8 (Four numbers)

$R$  is the event that the pointer lands on a red colour.

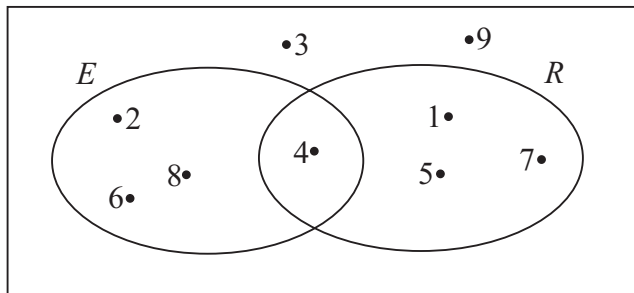
#### Question 4 (a)

$$P(E) = \frac{\text{Number of even numbers}}{\text{Number of numbers}} = \frac{4}{9}$$

#### Question 4 (b)

$$P(R) = \frac{\text{Number of red colours}}{\text{Number of numbers}} = \frac{4}{9}$$

#### Question 4 (c)



$$P(E \cup R) = P(E) + P(R) - P(E \cap R)$$

$$E \cap R = \{4\}$$

$$P(E \cup R) = \frac{4}{9} + \frac{4}{9} - \frac{1}{9} = \frac{7}{9}$$

#### Question 4 (d)

$$P(R | E) = \frac{P(R \cap E)}{P(E)} = \frac{\frac{1}{9}}{\frac{4}{9}} = \frac{1}{9} \times \frac{9}{4} = \frac{1}{4}$$

#### Question 4 (e)

$$P(E | R) = \frac{P(E \cap R)}{P(R)} = \frac{\frac{1}{9}}{\frac{4}{9}} = \frac{1}{9} \times \frac{9}{4} = \frac{1}{4}$$

#### Question 4 (f)

(i) Yes, because  $P(E) = P(R)$ ,

(ii) No:  $\frac{1}{4} \neq \frac{4}{9}$