

RELATION

1. Let Z be the set of integers. If

$$A = \left\{ x \in Z : 2^{(x+2)(x^2-5x+6)} = 1 \right\} \quad \text{and}$$

$B = \{ x \in Z : -3 < 2x - 1 < 9 \}$, then the number of subsets of the set $A \times B$, is:

- (1) 2^{18} (2) 2^{10} (3) 2^{15} (4) 2^{12}

SOLUTION

1. Ans (3)

$$A = \{x \in \mathbb{Z} : 2^{(x+2)(x^2-5x+6)} = 1\}$$

$$2^{(x+2)(x^2-5x+6)} = 2^0 \Rightarrow x = -2, 2, 3$$

$$A = \{-2, 2, 3\}$$

$$B = \{x \in \mathbb{Z} : -3 < 2x - 1 < 9\}$$

$$B = \{0, 1, 2, 3, 4\}$$

$A \times B$ has 15 elements so number of subsets of $A \times B$ is 2^{15} .