

JEE Maths DPP – SETS (Free PDF)

SEO Keywords: jee maths dpp pdf free download, set theory jee advanced, sets operations formulas, power set jee mains, algebra of sets questions

Q1. If $A = \{x \in \mathbb{R} : x^2 + 2x - 15 \leq 0\}$ and $B = \{x \in \mathbb{R} : |x| < 2\}$, then the set $A \cap B$ is:

- (a) $[-2, 2]$
- (b) $[-5, 3]$
- (c) $(-2, 2)$
- (d) $[-2, 3]$

Q2. Let A, B and C be three sets. Which of the following statements is always true?

- (a) $A \setminus (B \cup C) = (A \setminus B) \cup (A \setminus C)$
- (b) $A \setminus (B \cap C) = (A \setminus B) \cap (A \setminus C)$
- (c) $A \setminus (B \cup C) = (A \setminus B) \cap (A \setminus C)$
- (d) $A \cap (B \setminus C) = (A \cap B) \setminus (A \cap C)$

Q3. If A is the set of all integers, B is the set of all natural numbers, and C is the set of all even integers, then the set $(A \setminus B) \cap C$ is:

- (a) The set of all negative even integers.
- (b) The set of all negative integers.
- (c) The set of all odd integers.
- (d) The set of all non-positive even integers.

Q4. Let $U = \{1, 2, \dots, 10\}$. If $A = \{1, 3, 5, 7, 9\}$ and $B = \{2, 3, 5, 7\}$, then $(A' \cup B)'$ equals:

- (a) $A \cap B$
- (b) $A \cup B$
- (c) $A \setminus B$
- (d) $B \setminus A$

Q5. If a set A has m elements and the number of elements in its power set is 128, find m .

- (a) 5
- (b) 6
- (c) 7
- (d) 8

Q6. In a survey, 70% like apples, 75% like bananas, and $x\%$ like both. The maximum and minimum values of x are:

- (a) 70 and 45
- (b) 75 and 45
- (c) 70 and 50
- (d) 75 and 50

Q7. If $A = \{x \in \mathbb{Z} : x^3 - 1 = 0\}$ and $B = \{x \in \mathbb{R} : x^2 + x + 1 = 0\}$, then:

- (a) $A \subset B$
- (b) $B \subset A$
- (c) $A = B$
- (d) $A \cap B$ contains exactly two elements

Q8. $(A \setminus B) \cup (B \setminus A) \cup (A \cap B)$ equals:

- (a) $A \cap B$
- (b) $A \cup B$
- (c) U
- (d) $A' \cap B'$

Q9. If $A \setminus B = A$, then:

- (a) $A \cap B = A$
- (b) $A \cup B = A$
- (c) $A \cap B = \emptyset$
- (d) $B \subset A$

Q10. If S has n elements, the number of ordered pairs of disjoint subsets of S is:

- (a) 2^n
- (b) 3^n
- (c) 4^n
- (d) n^2

Q11. If $n(A) = 30$, $n(B) = 40$, $n(A \cap B) = 15$, then $n(A \Delta B)$ is:

- (a) 55
- (b) 45
- (c) 70
- (d) 85

Q12. Let $A = \{x \in \mathbb{R} : x^2 - 4x + 3 = 0\}$ and $B = \{x \in \mathbb{R} : x^2 - 4x + 4 > 0\}$. Then $A \cap B$ is:

- (a) $\{1, 3\}$
- (b) $\{1\}$
- (c) $\{3\}$
- (d) \emptyset

Q13. Let $A = [0, 10]$ and $B = (5, 15)$. The length of $A \setminus B$ is:

- (a) 5
- (b) 10
- (c) 0
- (d) 6

Q14. In a town of 10,000 people, 50% read A, 40% read B, 20% read C, 10% read A and B, 8% read B and C, 5% read A and C and 2% read all three. Find the number of people who read **exactly one** newspaper.

Q15. Let $n(A) = 3$, $n(B) = 4$. If $n((A \cup B) \times A) = 63$, find $n(A \cap B)$.