



SANGFORD SENIOR SECONDARY SCHOOL

CHAPTER SETS RELATIONS AND FUNCTIONS CLASS: XI, XII

SUBJECT: JEE - MATHEMATICS. TOTAL MARKS: 60x4=240, WRONG ANSWER:-1

DURATION: 60 Mnts, EXAM NO: J00MAT0101

INVIGILATOR'S SIGNATURE : _____

STUDENT NAME: _____ DATE: _____

1. The set $A = \{x : x \in \mathbb{R}, x^2 = 16 \text{ and } 2x = 6\}$ equals [4]
 - a) ϕ
 - b) $\{3\}$
 - c) $\{4\}$
 - d) $\{14, 3, 4\}$
2. Let $S = \{x \in \mathbb{R} : x \geq 0 \text{ and } 2|\sqrt{x} - 3| + \sqrt{x}(\sqrt{x} - 6) + 6 = 0\}$. Then, S [4]
 - a) contains exactly one element
 - b) contains exactly four elements
 - c) contains exactly two elements
 - d) is an empty set
3. If the sets A and B are defined as $A = \{(x, y) : y = \frac{1}{x}, 0 \neq x \in \mathbb{R}\}$ $\bigcup_{i=1}^{30} A_i = \bigcup_{j=1}^n B_j$, then [4]
 - a) $A \cap B = B$
 - b) $A \cap B = A$
 - c) $A \cap B = \phi$
 - d) None of these
4. If A and B are two sets, then $A \cup B = A \cap B$ iff [4]
 - a) None of these
 - b) $A \subseteq B$
 - c) $A = B$
 - d) $B \subseteq A$
5. Considering only the principal values of inverse functions, the set $A = \{x \geq 0 : \tan^{-1}(2x) + \tan^{-1}(3x) = \frac{\pi}{4}\}$ [4]
 - a) contains two elements
 - b) contains more than two elements
 - c) is an empty set
 - d) is a singleton
6. Let A and B be two sets. Then [4]
 - a) $A \cap B \subseteq A \cup B$
 - b) $A \cup B \subseteq A \cap B$
 - c) None of these
 - d) $A \cap B = A \cup B$
7. If $Q = \{x : x = \frac{1}{y}, \text{ where } y \in \mathbb{N}\}$, then [4]
 - a) $\frac{2}{3} \in Q$
 - b) $2 \in Q$
 - c) $0 \in Q$
 - d) $1 \in Q$
8. Let $f(x) = x^2, x \in \mathbb{R}$. For any $A \subseteq \mathbb{R}$, define $g(A) = \{x \in \mathbb{R} : f(x) \in A\}$. If $S = [0, 4]$, then which one of the following statements is not true? [4]
 - a) $f(g(S)) \neq f(S)$
 - b) $g(f(S)) = g(S)$
 - c) $f(g(S)) = S$
 - d) $g(f(S)) \neq S$
9. The set of intelligent students in a class is [4]