**JEE MAIN : CHAPTER WISE TEST-1**

**SUBJECT :- MATHEMATICS** **DATE**.....

**CLASS :- 11th** **NAME**.....

**CHAPTER :- SET** **SECTION**.....

**(SECTION A)**

**1.** In a town of 10,000 families it was found that 40% family buy newspaper *A*, 20% buy newspaper *B* and 10% families buy newspaper *C*, 5% families buy *A* and *B*, 3% buy *B* and *C* and 4% buy *A* and *C*. If 2% families buy all the three newspapers, then number of families which buy *A* only is

(A) 3100 (B) 3300

(C) 2900 (D) 1400

**2.** In a city 20 percent of the population travels by car, 50 percent travels by bus and 10 percent travels by both car and bus. Then persons travelling by car or bus is

(A) 80 percent (B) 40 percent

(C) 60 percent (D) 70 percent

**3.** If $Q=\left\{x : x=\frac{1}{y}, \text{where } y \in N\right\}$, then

(A) $0 \in Q$ (B) $1 \in Q$

(C) $2 \in Q$ (D) $\frac{2}{3} \in Q$

**4.** If *A* and *B* are two sets, then $A \cup B = A \cap B$ iff

(A) $A \subseteq B$ (B) $B \subseteq A$

(C) $A = B$ (D) None of these

**5.** If *A* = {2, 3, 4, 8, 10}, *B* = {3, 4, 5, 10, 12}, *C* = {4, 5, 6, 12, 14} then (*A* ∩ *B*) ∪ (*A* ∩ *C*) is equal to

(A) {3, 4, 10} (B) {2, 8, 10}

(C) {4, 5, 6} (D) {3, 5, 14}

**6.** If *A* and *B* are two sets, then $A \cap (A \cup B)'$ is equal to

(A) *A* (B) *B*

(C) $\phi$ (D) None of these

**7.** If $aN = \{ax : x \in N\}$, then the set $3N \cap 7N$ is

(A) 21 *N* (B) 10 *N*

(C) 4 *N* (D) None of these

**8.** Let $U$ be the universal set and $A \cup B \cup C = U$. Then $\{(A-B) \cup (B-C) \cup (C-A)\}'$ is equal to

(A) $A \cup B \cup C$ (B) $A \cup (B \cap C)$

(C) $A \cap B \cap C$ (D) $A \cap (B \cup C)$

**9.** A survey shows that 63% of the Americans like cheese whereas 76% like apples. If *x*% of the Americans like both cheese and apples, then

(A) $x = 39$ (B) $x = 63$

(C) $39 \le x \le 63$ (D) None of these

**10.** Let *A* and *B* be subsets of a set *X*. Then

(A) $A - B = A \cup B$ (B) $A - B = A \cap B$

(C) $A - B = A^c \cap B$ (D) $A - B = A \cap B^c$

**11.** If *A* = {*x* : *x* is a multiple of 4} and *B* = {*x* : *x* is a multiple of 6} then *A* ⊂ *B* consists of all multiples of

(A) 16 (B) 12 (C) 8 (D) 4

**12.** A class has 175 students. The following data shows the number of students obtaining one or more subjects. Mathematics 100, Physics 70, Chemistry 40; Mathematics and Physics 30, Mathematics and Chemistry 28, Physics and Chemistry 23; Mathematics, Physics and Chemistry 18. How many students have offered Mathematics alone

(A) 35 (B) 48 (C) 60 (D) 22

**13.** Consider the following relations :

(1) $A - B = A - (A \cap B)$

(2) $A = (A \cap B) \cup (A - B)$

(3) $A - (B \cup C) = (A - B) \cup (A - C)$

which of these is/are correct

(A) 1 and 3 (B) 2 only

(C) 2 and 3 (D) 1 and 2

**14.** If two sets *A* and *B* are having 99 elements in common, then the number of elements common to each of the sets $A \times B$ and $B \times A$ are

(A) $2^{99}$ (B) $99^2$ (C) 100 (D) 18

**15.** Given $n(U) = 20$, $n(A) = 12$, $n(B) = 9$, $n(A \cap B) = 4$, where *U* is the universal set, *A* and *B* are subsets of *U*, then $n((A \cup B)^C) =$

(A) 17 (B) 9 (C) 11 (D) 3

**16.** In a class of 55 students, the number of students studying different subjects are 23 in Mathematics, 24 in Physics, 19 in Chemistry, 12 in Mathematics and Physics, 9 in Mathematics and Chemistry, 7 in Physics and Chemistry and 4 in all the three subjects. The number of students who have taken exactly one subject is
(A) 6 (B) 9
(C) 7 (D) All of these

**17.** If $A$, $B$ and $C$ are any three sets, then $A \times (B \cup C)$ is equal to
(A) $(A \times B) \cup (A \times C)$
(B) $(A \cup B) \times (A \cup C)$
(C) $(A \times B) \cap (A \times C)$
(D) None of these

**18.** If $A$, $B$ and $C$ are any three sets, then $A - (B \cup C)$ is equal to
(A) $(A - B) \cup (A - C)$
(B) $(A - B) \cap (A - C)$
(C) $(A - B) \cup C$
(D) $(A - B) \cap C$

**19.** The set of intelligent students in a class is
(A) A null set
(B) A singleton set
(C) A finite set
(D) Not a well defined collection

**20.** If the sets $A$ and $B$ are defined as $A = \{(x, y) : y = e^x, x \in R\}$; $B = \{(x, y) : y = x, x \in R\}$, then
(A) $B \subseteq A$ (B) $A \subseteq B$
(C) $A \cap B = \phi$ (D) $A \cup B = A$

## (SECTION B)

**21.** If $A = \{2, 4, 5\}$, $B = \{7, 8, 9\}$, then $n(A \times B)$ is equal to

**22.** Let $S = \{0, 1, 5, 4, 7\}$. Then the total number of subsets of $S$ is

**23.** In a battle 70% of the combatants lost one eye, 80% an ear, 75% an arm, 85% a leg, $x$% lost all the four limbs. The minimum value of $x$ is

**24.** Out of 800 boys in a school, 224 played cricket, 240 played hockey and 336 played basketball. Of the total, 64 played both basketball and hockey; 80 played cricket and basketball and 40 played cricket and hockey; 24 played all the three games. The number of boys who did not play any game is

**25.** 20 teachers of a school either teach mathematics or physics. 12 of them teach mathematics while 4 teach both the subjects. Then the number of teachers teaching physics only is

**26.** Of the members of three athletic teams in a school 21 are in the cricket team, 26 are in the hockey team and 29 are in the football team. Among them, 14 play hockey and cricket, 15 play hockey and football, and 12 play football and cricket. Eight play all the three games. The total number of members in the three athletic teams is

**27.** In a class of 100 students, 55 students have passed in Mathematics and 67 students have passed in Physics. Then the number of students who have passed in Physics only is

**28.** In a class of 30 pupils, 12 take needle work, 16 take physics and 18 take history. If all the 30 students take at least one subject and no one takes all three then the number of pupils taking 2 subjects is

**29.** If $n(A) = 4$, $n(B) = 3$, $n(A \times B \times C) = 24$, then $n(C) =$

**30.** The number of elements in the set $\{(a, b) : 2a^2 + 3b^2 = 35, a, b \in Z\}$, where $Z$ is the set of all integers, is