* Choose the right answer from the given options. [1 Marks Each]

[20]

1. Let n(A) = 28, n(A ∩ B) = 8, n(A ∪ B) = 52, then n(A ∩ B′) =.
   (A) 30 (B) 32 (C) 20 (D) none of these.

2. If out of 150 students who read at least one newspaper The Times of India, The Hindustan Times and The Hindu. There are 65 who read The Times of India, 41 who read The Hindu and 50 who read The Hindustan Times.What is the maximum possible number of students who read all the three newspaper?
   (A) 7 (B) 42 (C) 3 (D) Cannot be determined

3. If n(A) denotes the number of elements in set A and if n(A) = 4, n(B) = 5 and n(A ∩ B) = 3 then n[(A × B) ∩ (B × A)]=
   (A) 8 (B) 9 (C) 10 (D) 11

4. Given A = {a, b, c, d, e, f, g, h} and B = {a, e, i, o, u} then B - A is equal to:
   (A) {i, o, u} (B) {a, b, c} (C) {c, d, e} (D) {a, i, z}

5. Let F_1 be the set of all parallelograms, F_2 the set of all rectangles, F_3 the set of all rhombuses, F_4 the set of all squares and F_5 the set of trapeziums in a plane. Then F_1 may be equal to:
   (A) $F_2 \cap F_3$ (B) $F_3 \cap F_4$ (C) $F_2 \cup F_3$ (D) $F_2 \cup F_3 \cup F_4 \cup F_1$.

6. In 2nd quadrant?
   (A) X < 0, Y < 0 (B) X < 0, Y > 0 (C) X > 0, Y > 0 (D) X > 0, Y < 0

7. The symmetric difference of A = {1, 2, 3} and B = {3, 4, 5} is:
   (A) {1, 2} (B) {1, 2, 4, 5} (C) {4, 3} (D) {2, 5, 1, 4, 3}.

8. In a class of 50 students 35 opted for Mathematics and 37 opted for Biology How may have opted for only Mathematics? (Assume that each student has to opt for at least one of the subjects)
   (A) 15 (B) 17 (C) 13 (D) 19

9. A and B are two sets having 3 and 5 elements respectively and having 2 elements in common. Then the number of elements in A × B is:
   (A) 6 (B) 36 (C) 15 (D) None of these

10. If A = {x : x is a multiple of 3} and B = {x : x is a multiple of 5}, then A - B is:
    (A) $A \cap B$ (B) $A \cap \overline{B}$ (C) $\overline{A} \cap \overline{B}$ (D) $\overline{A \cap B}$.

11. If A = {1, 2, 3, 4, 5}, then the number of proper subsets of A is:
    (A) 120 (B) 30 (C) 31 (D) 32.

12. An investigator interviewed 100 students to determine the performance of three drinks: milk, coffee and tea. The investigator reported that 10 students take all three drinks milk, coffee and tea; 20 students take milk and coffee; 25 students take milk and tea; 12 students take milk only; 5 students take coffee only and 8 students take tea only. Then the number of students who did not take any of three drinks is:
    (A) 10 (B) 20 (C) 25 (D) 30.

13. If A and B are two given sets, then $A \cap (A \cap B)^c$ is equal to:
    (A) A (B) B (C) ϕ (D) $A \cap B^c$.

14. Let U be the universal set containing 700 elements. If A, B are subsets of U such that $n(A) = 200, n(B) = 300$ and $n(A \cap B) = 100$. Then, $n(A' \cap B') =$
    (A) 400 (B) 600 (C) 300 (D) None of these.

15. For any set A, (A')' is equal to:
    (A) A' (B) A (C) ϕ (D) None of these.

16. Suppose $A_1, A_2, ..., A_{30}$ are thirty sets each having 5 elements and $B_1, B_2, ..., B_n$ are n sets each with 3 elements. Let $\bigcup_{i=1}^{30} A_i = \bigcup_{j=1}^{n} B_j = S$ and each element of S belong to exactly 10 of the A_i's and exactly 9 of the B_j's, then n is equal to:
    (A) 15 (B) 3 (C) 45 (D) 35.

17. Let A = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}. Then the number of subsets of A containing exactly two elements is:
    (A) 20 (B) 40 (C) 45 (D) 90

18. While preparing the progress reports of the students, the class teacher found that 70% of the students passed in Hindi, 80% passed in English and only 65% passed in both the subjects. Find out the percentage of students who failed in both the subjects.

   (A) 15%   (B) 20%   (C) 30%   (D) 35%

19. $\{ (A, B) : A^2 + B^2 = 1 \}$ on the sets has the following relation.

   (A) Reflexive   (B) Symmetric

   (C) Reflexive and transitive   (D) None

20. The range of the function f(x) = 3x - 2, is.

   (A) $(-\infty, \infty)$ (B) $R - (3)$ (C) $(-\infty, 0)$ (D) $(0, -\infty)$

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