CBSE

SETS WS

Class 11 - Mathematics

1. For any two sets A and B, $A \cap (A \cup B) = \ldots$. **[1]**

   a) A b) ϕ

   c) $\neq \phi$ d) B

2. If A = {x : x is a multiple of 3, x natural no., x < 30} and B = {x : x is a multiple of 5, x is natural no., x < 30} then A - B is **[1]**

   a) {3, 6, 9, 12, 15, 18, 21, 24, 27, 30} b) {3, 6, 9, 12, 18, 21, 24, 27}

   c) {3, 5, 6, 9, 10, 12, 15, 18, 20, 21, 25, 27, 30} d) {3, 6, 9, 12, 18, 21, 24, 27, 30}

3. Given the sets A = {1, 2, 3}, B = {3, 4}, C = {4, 5, 6}, then A ∪(B ∩ C) is **[1]**

   a) {1, 2, 3} b) {3}

   c) {1, 2, 3, 4, 5, 6} d) {1, 2, 3, 4}

4. The smallest set A such that A ∪ {1, 2} = {1, 2, 3, 5, 9} is **[1]**

   a) {1, 2, 5, 9} b) {4, 5, 6}

   c) {3, 5, 9} d) {2, 3, 5}

5. If A = {1, 2, 3, 4, 5, 6} then the number of proper subsets is **[1]**

   a) 63 b) 36

   c) 64 d) 25

6. For any set A, (A')' is equal to **[1]**

   a) ϕ b) A"

   c) A d) A'

7. If A = {1, 3, 5, 7, 9, 11, 13, 15, 17} ,B = {2, 4, ... , 18} and N the set of natural numbers is the universal set, then A′ ∪ (A ∪ B) ∩ B′) is **[1]**

   a) N b) A

   c) ϕ d) B

8. Which of the following is a set? **[1]**

   A. A collection of vowels in English alphabets is a set.

   B. The collection of most talented writers of India is a set.

   C. The collection of most difficult topics in Mathematics is a set.

   D. The collection of good cricket players of India is a set.

   a) B b) D

c) A

d) C

9. Let A = {a, b, c}, B = {a, b}, C = {a, b, d}, D = {c, d} and E = {d}. Then which of the following statement is not correct? **[1]**

a) D $\supseteq$ E

b) C - B = E

c) B $\cup$ E = C

d) C - D = E

10. If sets A and B are defined as A = $\left\{(x, y) | y = \frac{1}{x}, 0 \neq x \in \mathbf{R}\right\}$, B = {(x, y) | y = -x, x $\in$ R}, then **[1]**

a) A $\cap$ B = A

b) A $\cup$ B = A

c) A $\cap$ B = ϕ

d) A $\cap$ B = B

11. If $A \cup B = B$ then **[1]**

a) $B \subset A$

b) $A \subseteq B$

c) B = ϕ

d) A $\neq \phi$

12. If A $\subset$ B, then **[1]**

a) $A^c \subset B^c$

b) $B^c \not\subset A^c$

c) $A^c = B^c$

d) $B^c \subset A^c$

13. The set A = {x : x is a positive prime number less than 10} in the tabular form is **[1]**

a) {2, 3, 5, 7}

b) {1, 2, 3, 5, 7}

c) {3, 5, 7}

d) {1, 3, 5, 7, 9}

14. If a set A has n elements then the total number of subsets of A is **[1]**

a) 2n

b) n

c) 2^n

d) n^2

15. If A = {1, 3, 5, B} and B = {2, 4}, then **[1]**

a) {4} $\subset$ A

b) None of these

c) B $\subset$ A

d) 4 $\in$ A

16. The number of subsets of a set containing n elements is **[1]**

a) 2^n-1

b) 2^n - 2

c) 2^n

d) n

17. Let A = $\{x : x \notin R, x \geqslant 4\}$and B = $\{x : x \notin R, x < 5\}$ then $A \cap B$ is **[1]**

a) {5, 4}

b) {4, 5}

c) {4}

d) $\{x : x \in R,\ 4 \leq x < 5\}$

18. Let A and B be two non- empty subsets of a set X such that A is not a subset of B, then **[1]**

a) A and the complement of B are always non-disjoint

b) A is always a subset of B

c) A and B are always disjoint

d) B is always a subset of A

19. If A = {(x, y) : $x^2 + y^2 = 25$} and B = {(x, y) : $x^2 + 9y^2 = 144$} then A $\cap$ B contains **[1]**

a) three points

b) two points

c) one point

d) four points

20. The number of proper subsets of the set {1, 2, 3} is : **[1]**

a) 6

b) 7

c) 8

d) 5

21. If A = {0, 1, 5, 4, 7}. Then the total number subsets of A are **[1]**

a) 20

b) 32

c) 64

d) 40

22. If A ∩ B = B then **[1]**

a) A = ϕ

b) B = ϕ

c) B $\neq \phi$

d) B $\subseteq$ A

23. Let A = {x : x ∈ R, x > 4} and B = {x ∈ R : x < 5}. Then, A ∩ B = **[1]**

a) [4, 5)

b) [4, 5]

c) (4, 5]

d) (4, 5)

24. If A and B are two sets, then A ∩ (A ∪ B) equals **[1]**

a) B

b) ϕ

c) A

d) A ∩ B

25. If A, B, C be any three sets such that $A \cup B = A \cup C$ and $A \cap B = A \cap C$, then **[1]**

a) B = C

b) A = B = C

c) A = C

d) A = B

26. Let R be set of points inside a rectangle of sides a and b (a, b > 1) with two sides along the positive direction of x-axis and y-axis. Then **[1]**

a) R = {(x, y) : $0 \leq x \leq a, 0 \leq y \leq b$}

b) R = {(x, y) : $0 \leq x < a, 0 \leq y \leq b$}

c) R = {(x, y) : 0 < x < a, 0 < y < b}

d) R = {(x, y) : $0 \leq x \leq a, 0 < y < b$}

27. Which of the following is a null set? **[1]**

a) C = ϕ

b) B = {x : x + 3 = 3}

c) D = {0}

d) A = {x : x > 1 and x < 3}

28. In a set builder method the null set is represented by **[1]**

a) { x : x = x }

b) ϕ

c) { }

d) (x: x $\neq$x).

29. 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 having 3 elements. Let $\bigcup_{i=1}^{30} A_i = \bigcup_{j=1}^{n} B_j = S$ and each element of S belongs to exactly 10 of $A_i^{'s}$ and exactly 9 of $B_i^{'s}$. Then n is equal to. **[1]**

a) 3

b) 15

c) 45 d) 35

30. If A = {x : x $\neq$ x} represents **[1]**

a) {1} b) { }

c) {x} d) {0}

31. Two finite sets have m and n elements. The total number of subsets of the first set is 56 more than the total number of subsets of the second set. The values of m and n are **[1]**

a) 7, 4 b) 6, 4

c) 3, 3 d) 6, 3

32. Each set X_r contains 5 elements and each set Y_r contains 2 elements and $\bigcup_{r=1}^{20} x_r = S = \bigcup_{r=1}^{n} Y_r$. If each element of S belong to exactly 10 of the X_r's and to exactly 4 of the Y_r's, then n is **[1]**

a) 10 b) 20

c) 50 d) 100

33. Two finite sets have m and n elements respectively. The total number of subsets of first set is 56 more than the total number of subsets of the second set. The values of m and n respectively are. **[1]**

a) 5, 1 b) 7, 6

c) 8, 7 d) 6, 3

34. The number of subsets (Improper) of a set containing n elements is **[1]**

a) 2^n b) $2^n - 1$

c) $2^n - 2$ d) n

35. For any two sets A and B, A$\cup$B = A if **[1]**

a) A = B b) B$\in$A

c) A $\neq$B d) $B \subseteq A$

36. If Q = {x : x = $\frac{1}{y}$, where y $\in$ N}, then **[1]**

a) 1 $\in$ Q b) $\frac{1}{2} \notin$ Q

c) 2 $\in$ Q d) 0 $\in$ Q

37. The number of non-empty subsets of the set {1, 2, 3, 4} is: **[1]**

a) 14 b) 16

c) 17 d) 15

38. The set of all prime numbers is **[1]**

a) an infinite set b) a singleton set

c) a multi set d) a finite set

39. Let S = {x | x is a positive multiple of 3 less than 100} **[1]**
P = {x | x is a prime number less than 20}. Then n(S) + n(P) is

a) 41 b) 30

c) 34 d) 33

40. If A and B are two sets then $A \cap (A \cap B') = \ldots .$ **[1]**

a) $\in$ b) A

c) ϕ d) B

41. Which set is the subset of all given sets? **[1]**

a) {1} b) {0}

c) {1, 2, 3, 4} d) { }

42. If aN = {ax : x $\in$ N}, then the set 3N $\cap$ 7N is **[1]**

a) 10N b) 7N

c) 21N d) 4N

43. For any two sets A and B, $A \cap (A \cup B) = \ldots .$ **[1]**

a) $\neq \phi$ b) B

c) ϕ d) A

44. Two finite sets have m and n elements. The number of subsets of the first set is 112 more than that of the second set. The values of m and n are, respectively, **[1]**

a) 7, 7 b) 4, 4

c) 7, 4 d) 4, 7

45. For any two sets A and B, A $\cap$ (A $\cup$ B)' is equal to **[1]**

a) A $\cap$ B b) ϕ

c) B d) A

46. If A and B are two given sets , then A $\cap$ $(A \cap B)^c$ is equal to **[1]**

a) B b) A

c) $A \cap B^c$ d) ϕ

47. For two sets A $\cup$ B = A if **[1]**

a) A = B b) A $\neq$ B

c) B $\subseteq$ A d) A $\subseteq$ B

48. Let F_1 be the set of parallelograms, F_2 the set of rectangles, F_3 the set of rhombuses, F_4 the set of squares and F_5 the set of trapeziums in a plane. Then F_1 may be equal to **[1]**

a) $F_2 \cap F_3$ b) $F_3 \cap F_4$

c) $F_2 \cup F_5$ d) $F_2 \cup F_3 \cup F_4 \cup F_1$

49. Let S = set of points inside the square, T = the set of points inside the triangle and C = the set of points inside the circle. If the triangle and circle intersect each other and are contained in a square. Then **[1]**

a) S $\cap$ T = S $\cap$ C b) S $\cap$ T $\cap$ C = ϕ

c) S $\cup$ T $\cup$ C = C d) S $\cup$ T $\cup$ C = S

50. Consider the following relations: 1. A - B = A - $(A \cap B)$ 2. A = $(A \cap B)$ ∪(A - B). 3. A - (B ∪ C) = (A - B) ∪ (A - C). Which of these is/are correct? **[1]**

a) 2 only

b) 1 and 3

c) 1 and 2

d) 2 and 3