



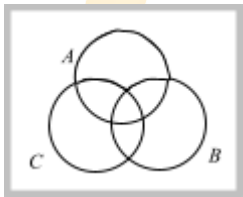
1. In rule method the null set is represented by  
(a)  $\{\}$  (b)  $\phi$  (c)  $\{x : x = x\}$  (d)  $\{x : x \neq x\}$
2.  $A = \{x : x \neq x\}$  represents  
(a)  $\{0\}$  (b)  $\{\}$  (c)  $\{1\}$  (d)  $\{x\}$
3. If  $A = \{\phi, \{\phi\}\}$ , then the power set of A is  
(a) A (b)  $\{\phi, \{\phi\}, A\}$  (c)  $\{\phi, \{\phi\}, \{\{\phi\}\}, A\}$  (d) None of these
4. 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)  $\frac{2}{3} \in Q$
5. Which set is the subset of all given sets  
(a)  $\{1, 2, 3, 4, \dots\}$  (b)  $\{1\}$  (c)  $\{0\}$  (d)  $\{\}$
6. Let  $S = \{0, 1, 5, 4, 7\}$ . Then the total number of subsets of S is  
(a) 64 (b) 32 (c) 40 (d) 20
7. The number of non-empty subsets of the set  $\{1, 2, 3, 4\}$  is  
(a) 15 (b) 14 (c) 16 (d) 17
8. If  $A = \{1, 2, 3, 4, 5\}$ , then the number of proper subsets of A is  
**[Karnataka CET 1997]**  
(a) 120 (b) 30 (c) 31 (d) 32
9. Let  $A = \{1, 2, 3, 4\}, B = \{2, 3, 4, 5, 6\}$ , then  $A \cap B$  is equal to  
(a)  $\{2, 3, 4\}$  (b)  $\{1, 2, 3\}$  (c)  $\{5, 6\}$  (d)  $\{1\}$
10. The smallest set A such that  $A \cup \{1, 2\} = \{1, 2, 3, 5, 9\}$  is  
(a)  $\{2, 3, 5\}$  (b)  $\{3, 5, 9\}$  (c)  $\{1, 2, 5, 9\}$  (d) None of these
11. If  $A \cap B = B$ , then  
(a)  $A \subset B$  (b)  $B \subset A$  (c)  $A = \phi$  (d)  $B = \phi$
12. For two sets  $A \cup B = A$  iff  
(a)  $B \subseteq A$  (b)  $A \subseteq B$  (c)  $A \neq B$  (d)  $A = B$



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13. 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
14. Let  $A$  and  $B$  be two sets. Then  
(a)  $A \cup B \subseteq A \cap B$  (b)  $A \cap B \subset A \cup B$  (c)  $A \cap B = A \cup B$  (d) None of these
15. Let  $A = \{(x, y) : y = e^x, x \in R\}$ ,  $B = \{(x, y) : y = e^{-x}, x \in R\}$ . Then  
(a)  $A \cap B = \phi$  (b)  $A \cap B \neq \phi$  (c)  $A \cup B = R^2$  (d) None of these
16. If  $A = \{2, 3, 4, 8, 10\}$ ,  $B = \{3, 4, 5, 10, 12\}$ ,  $C = \{4, 5, 6, 12, 14\}$  then  $(A \cap B) \cup (A \cap C)$  is equal to  
(a)  $\{3, 4, 10\}$  (b)  $\{2, 8, 10\}$  (c)  $\{4, 5, 6\}$  (d)  $\{3, 5, 14\}$
17. If  $A$  and  $B$  are any two sets, then  $A \cap (A \cup B)$  is equal to  
(a)  $A$  (b)  $B$  (c)  $A^c$  (d)  $B^c$
18. If  $A, B, C$  be three sets such that  $A \cup B = A \cup C$  and  $A \cap B = A \cap C$ , then  
**[Roorkee 1991]**  
(a)  $A = B$  (b)  $B = C$  (c)  $A = C$  (d)  $A = B = C$
19. Let  $A = \{a, b, c\}$ ,  $B = \{b, c, d\}$ ,  $C = \{a, b, d, e\}$ , then  $A \cap (B \cup C)$  is  
**[Kurukshetra CEE 1997]**  
(a)  $\{a, b, c\}$  (b)  $\{b, c, d\}$  (c)  $\{a, b, d, e\}$  (d)  $\{e\}$
20. If  $A = \{2, 3, 4, 8, 10\}$ ,  $B = \{3, 4, 5, 10, 12\}$ ,  $C = \{4, 5, 6, 12, 14\}$  then  $(A \cup B) \cap (A \cup C)$  is equal to  
(a)  $\{2, 3, 4, 5, 8, 10, 12\}$  (b)  $\{2, 8, 10\}$  (c)  $\{2, 4, 8, 10, 12\}$  (d)  $\{3, 8, 10, 12\}$
21. If  $A$  and  $B$  are sets, then  $A \cap (B - A)$  is  
(a)  $\phi$  (b)  $A$  (c)  $B$  (d) None of these
22. Two sets  $A, B$  are disjoint iff  
(a)  $A \cup B = \phi$  (b)  $A \cap B \neq \phi$  (c)  $A \cap B = \phi$  (d)  $A - B = A$
23. Let  $A$  and  $B$  be two non-empty subsets of a set  $X$  such that  $A$  is not a subset of  $B$ , then  
**[UPSEAT 1995]**  
(a)  $A$  is always a subset of the complement of  $B$  (b)  $B$  is always a subset of  $A$   
(c)  $A$  and  $B$  are always disjoint (d)  $A$  and the complement of  $B$  are always non-disjoint
24. If  $A \subseteq B$ , then  $A \cap B$  is equal to  
(a)  $A$  (b)  $B$  (c)  $A^c$  (d)  $B^c$



25. 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
26. Let  $\cup = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ ,  $A = \{1, 2, 5\}$ ,  $B = \{6, 7\}$ , then  $A \cap B'$  is  
(a)  $B'$  (b)  $A$  (c)  $A'$  (d)  $B$
27. If  $A$  is any set, then  
(a)  $A \cup A' = \phi$  (b)  $A \cup A' = \cup$  (c)  $A \cap A' = \cup$  (d) None of these
28. If  $N_a = \{an : n \in N\}$ , then  $N_6 \cap N_8 =$   
(a)  $N_6$  (b)  $N_8$  (c)  $N_{24}$  (d)  $N_{44}$
29. If  $aN = \{ax : x \in N\}$ , then the set  $3N \cap 7N$  is  
(a)  $21N$  (b)  $10N$  (c)  $4N$  (d) None of these
30. The shaded region in the given figure is  
  
(a)  $A \cap (B \cup C)$  (b)  $A \cup (B \cap C)$  (c)  $A \cap (B - C)$  (d)  $A - (B \cup C)$
31. If  $A = \{x : f(x) = 0\}$  and  $B = \{x : g(x) = 0\}$ , then  $A \cap B$  will be  
(a)  $[f(x)]^2 + [g(x)]^2 = 0$  (b)  $\frac{f(x)}{g(x)}$  (c)  $\frac{g(x)}{f(x)}$  (d) None of these
32. If  $A$  and  $B$  are two sets then  $(A - B) \cup (B - A) \cup (A \cap B)$  is equal to  
(a)  $A \cup B$  (b)  $A \cap B$  (c)  $A$  (d)  $B'$
33. Let  $A$  and  $B$  be two sets then  $(A \cup B)' \cup (A' \cap B)$  is equal to  
(a)  $A'$  (b)  $A$  (c)  $B'$  (d) None of these
34. 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)  $A \cap (B \cup C)$
35. If  $n(A) = 3$ ,  $n(B) = 6$  and  $A \subseteq B$ . Then the number of elements in  $A \cup B$  is equal to  
(a) 3 (b) 9 (c) 6 (d) None of these



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36. If  $n(A) = 3$  and  $n(B) = 6$  and  $A \subseteq B$ . Then the number of elements in  $A \cap B$  is equal to  
(a) 3 (b) 9 (c) 6 (d) None of these
37. Let  $A$  and  $B$  be two sets such that  $n(A) = 0.16, n(B) = 0.14, n(A \cup B) = 0.25$ . Then  $n(A \cap B)$  is equal to  
**[JMIEE 2001]**  
(a) 0.3 (b) 0.5 (c) 0.05 (d) None of these
38. If  $A$  and  $B$  are disjoint, then  $n(A \cup B)$  is equal to  
(a)  $n(A)$  (b)  $n(B)$  (c)  $n(A) + n(B)$  (d)  $n(A) \cdot n(B)$
39. If  $A$  and  $B$  are not disjoint sets, then  $n(A \cup B)$  is equal to  
**[Kerala (Engg.) 2001]**  
(a)  $n(A) + n(B)$  (b)  $n(A) + n(B) - n(A \cap B)$  (c)  $n(A) + n(B) + n(A \cap B)$  (d)  $n(A)n(B)$  (e)  $n(A) - n(B)$
40. 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  
(a) 10 (b) 12 (c) 15 (d) None of these
41. In a certain town 25% families own a phone and 15% own a car, 65% families own neither a phone nor a car. 2000 families own both a car and a phone. Consider the following statements in this regard:  
1. 10% families own both a car and a phone  
2. 35% families own either a car or a phone  
3. 40,000 families live in the town  
Which of the above statements are correct ?  
(a) 1 and 2 (b) 1 and 3 (c) 2 and 3 (d) 1, 2 and 3
42. 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  
(a) 128 (b) 216 (c) 240 (d) 160
43. 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)  $39 \leq x \leq 63$  (d) None of these
44. 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



- (a) 12 (b) 8 (c) 16 (d) None of these
45. 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  
(a) 43 (b) 76 (c) 49 (d) None of these
46. 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  
(a) 22 (b) 33 (c) 10 (d) 45
47. In a college of 300 students, every student reads 5 newspaper and every newspaper is read by 60 students. The no. of newspaper is  
(a) At least 30 (b) At most 20 (c) Exactly 25 (d) None of these
48. If  $A$  and  $B$  are two sets, then  $A \times B = B \times A$  iff  
(a)  $A \subseteq B$  (b)  $B \subseteq A$  (c)  $A = B$  (d) None of these
49. If  $A, B$  be any two sets, then  $(A \cup B)^c$  is equal to  
(a)  $A' \cup B'$  (b)  $A' \cap B'$  (c)  $A \cap B$  (d)  $A \cup B$
50. If  $A$  and  $B$  be any two sets, then  $(A \cap B)^c$  is equal to  
(a)  $A' \cap B'$  (b)  $A' \cup B'$  (c)  $A \cap B$  (d)  $A \cup B$
51. 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)  $A - B = A \cap B^c$
52. Let  $A$  and  $B$  be two sets in the universal set. Then  $A - B$  equals  
(a)  $A \cap B^c$  (b)  $A^c \cap B$  (c)  $A \cap B$  (d) None of these
53. If  $A, B$  and  $C$  are any three sets, then  $A - (B \cap C)$  is equal to  
(a)  $(A - B) \cup (A - C)$  (b)  $(A - B) \cap (A - C)$  (c)  $(A - B) \cup C$  (d)  $(A - B) \cap C$
54. If  $A, B, C$  are three sets, then  $A \cap (B \cup C)$  is equal to  
(a)  $(A \cap B) \cup (A \cap C)$  (b)  $(A \cup B) \cap (A \cup C)$  (c)  $(A \cup B) \cup (A \cup C)$  (d) None of these
55. If  $A = \{1, 2, 4\}$ ,  $B = \{2, 4, 5\}$ ,  $C = \{2, 5\}$ , then  $(A - B) \times (B - C)$  is  
(a)  $\{(1, 2), (1, 5), (2, 5)\}$  (b)  $\{(1, 4)\}$  (c)  $(1, 4)$  (d) None of these
56. If  $(1, 3), (2, 5)$  and  $(3, 3)$  are three elements of  $A \times B$  and the total number of elements in  $A \times B$  is 6, then the remaining elements of  $A \times B$  are  
(a)  $(1, 5); (2, 3); (3, 5)$  (b)  $(5, 1); (3, 2); (5, 3)$  (c)  $(1, 5); (2, 3); (5, 3)$  (d) None of these
57. Let  $A = \{1, 2, 3, 4, 5\}$ ;  $B = \{2, 3, 6, 7\}$ . Then the number of elements in  $(A \times B) \cap (B \times A)$  is



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- (a) 18                      (b) 6                      (c) 4                      (d) 0
58.  $A = \{1, 2, 3\}$  and  $B = \{3, 8\}$ , then  $(A \cup B) \times (A \cap B)$  is  
(a)  $\{(3, 1), (3, 2), (3, 3), (3, 8)\}$                       (b)  $\{(1, 3), (2, 3), (3, 3), (8, 3)\}$   
(c)  $\{(1, 2), (2, 2), (3, 3), (8, 8)\}$                       (d)  $\{(8, 3), (8, 2), (8, 1), (8, 8)\}$
59. If  $A = \{2, 3, 5\}$ ,  $B = \{2, 5, 6\}$ , then  $(A - B) \times (A \cap B)$  is  
(a)  $\{(3, 2), (3, 3), (3, 5)\}$  (b)  $\{(3, 2), (3, 5), (3, 6)\}$  (c)  $\{(3, 2), (3, 5)\}$                       (d) None of these

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