

Practice Exercise

Level - I

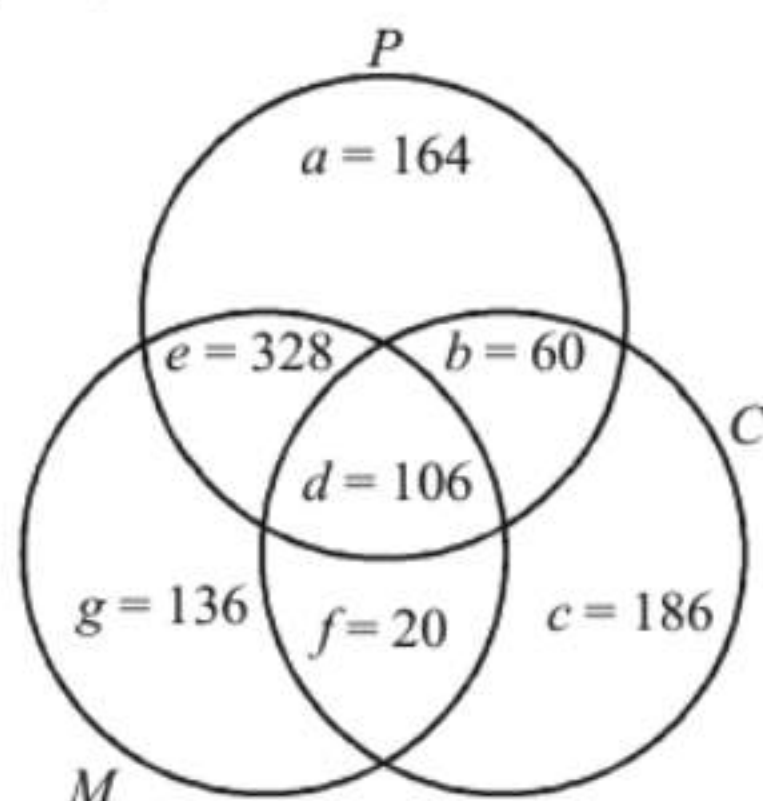
- In a group of students, 100 students know Hindi, 50 know English and 25 know both. Each of the students knows either Hindi or English. How many students are there in the group?
(a) 100 (b) 115
(c) 110 (d) 125
- If X and Y are two sets such that $n(X) = 17$, $n(Y) = 23$ and $n(X \cup Y) = 38$, then $n(X \cap Y)$
(a) 2 (b) 1
(c) 3 (d) 4
- If X and Y are two sets such that X has 40 elements, $X \cup Y$ has 60 elements and $X \cap Y$ has 10 elements, how many elements does Y have?
(a) 25 (b) 35
(c) 30 (d) 40
- Let $S = \{0, 1, 5, 4, 7\}$. Then the total number of subsets of S is
(a) 64 (b) 32
(c) 40 (d) 20
- 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) 19
- In an examination out of 100 students, 75 passed in English, 60 passed in Mathematics and 45 passed in both English and Mathematics. What is the number of students passed in exactly one of the two subjects?
(a) 45 (b) 60
(c) 75 (d) 90
- If $X = \{4^n - 3n - 1 : n \in N\}$ and $Y = \{9(n-1) : n \in N\}$, then precisely:
(a) $X \subset Y$ (b) $X \subseteq Y$
(c) $X = Y$ (d) $X \supseteq Y$
- $A \cup B = A$, then
(a) $A \subset B$ (b) $B \subset A$
(c) $A \not\subset B$ and $B \not\subset A$ (d) None of these

Level - II

DIRECTIONS (Qs. 1–3) : Read the information given below and answer the questions that follow.

The result of an exam is given below. Out of 1000 students who appeared

- 658 failed in Physics
 - 166 failed in Physics and Chemistry
 - 372 failed in Chemistry, 434 failed in Physics and Maths
 - 590 failed in Maths, 126 failed in Maths & Chemistry.
- Find the number of people who failed in (assuming that none is passed in all subjects).



We have the following equations :

$$a + b + c + d + e + f + g = 1000$$

$$a + b + d + e = 658, b + d = 166$$

$$b + d + c + f = 372.$$

$$d + e = 434 \text{ as in the figure.}$$

$$d + e + f + g = 590, d + f = 126. \text{ Find the values.}$$

- Chemistry but not in Physics.
(a) 318 (b) 198
(c) 213 (d) 206
- Physics or Maths but not in Chemistry.
(a) 558 (b) 718
(c) 628 (d) None of these
- Physics but neither Chemistry nor Maths.
(a) 164 (b) 228
(c) 196 (d) None of these
- 70 per cent of the employees in a multinational corporation have VCD players, 75 per cent have microwave ovens, 80 per cent have ACs and 85 per cent have washing machines. At least what percentage of employees has all four gadgets?
(a) 15 (b) 5
(c) 10 (d) Cannot be determined
- If $A = \{1, 2, 5, 6\}$ and $B = \{1, 2, 3\}$, then $(A \times B) \cap (B \times A)$ is equal to?
(a) $\{(1, 1), (2, 1), (6, 1), (3, 2)\}$
(b) $\{(1, 1), (1, 2), (2, 1), (2, 2)\}$
(c) $\{(1, 1), (2, 2)\}$
(d) $\{(1, 1), (1, 2), (2, 5), (2, 6)\}$
- Which one of the following is a null set?
(a) $\{0\}$ (b) $\{\{\{\}\}\}$
(c) $\{\{\}\}$ (d) $\{x | x^2 + 1 = 0, x \in R\}$
- In a certain office, 72% of the workers prefer tea and 44% prefer coffee. If each of them prefers tea or coffee and 40 like both, the total number of workers in the office is :
(a) 200 (b) 240
(c) 250 (d) 320

8. A survey show that 63% of the Indians like cheese whereas 76% like apples. If $x\%$ of the Indians like both cheese and apples, then find the range of x .
- (a) $0 \leq x \leq 23\%$ (b) $0 \leq x \leq 39\%$
 (c) $4 \leq x \leq 35\%$ (d) $6 \leq x \leq 33\%$
9. $A \equiv \{x | x \text{ is a prime number} \leq 100\}$
 $B \equiv \{x | x \text{ is an odd number} \leq 100\}$
 What is the ratio of the number of subsets of set A to set B ?
- (a) 2^{25} (b) 2^{-25}
 (c) 2 (d) $\frac{50^2}{25^2}$
10. If A and B are two sets such that A has 12 elements, B has 17 elements, and $A \cup B$ has 21 elements, how many elements does $A \cap B$ have?
- (a) 7 (b) 8
 (c) 9 (d) 10
11. In an examination 70% of the candidates passed in English, 65% in Mathematics, 27% failed in both the subjects. Find the total number of candidates.
- (a) 200 (b) 400
 (c) 300 (d) 100
12. If the set A has p elements, B has q elements, then the number of elements in $A \times B$ is
- (a) $p + q + 1$ (b) pq
 (c) p^2 (d) $p + q$
13. Let $A = \{(n, 2n) : n \in N\}$ and $B = \{(2n, 3n) : n \in N\}$. Then $A \cap B$ equal to?
- (a) $\{(n, 6n) : n \in N\}$ (b) $\{(2n, 6n) : n \in N\}$
 (c) $\{(n, 3n) : n \in N\}$ (d) ϕ
14. If $n(A) = 115$, $n(B) = 326$, $n(A - B) = 47$, then what is $n(A \cup B)$ equal to?
- (a) 373 (b) 165
 (c) 370 (d) 394

For the next Four (15–18) questions that follow:

In a city, three daily newspapers A , B , C are published, 42% read A ; 51% read B ; 68% read C ; 30% read A and B ; 28% read B and C ; 36% read A and C ; 8% do not read any of the three newspapers.

15. What is the percentage of persons who read all the three papers?
- (a) 20% (b) 25%
 (c) 30% (d) 40%
16. What is the percentage of persons who read only two papers?
- (a) 19% (b) 31%
 (c) 44% (d) None of these
17. What is the percentage of persons who read only one paper?
- (a) 38% (b) 48%
 (c) 51% (d) None of these
18. What is the percentage of persons who read only A but neither B nor C ?
- (a) 4% (b) 3%
 (c) 1% (d) None of these
19. If A and B are any two sets, then what is $A \cap (A \cup B)$ equal to?
- (a) Complement of A (b) Complement of B
 (c) B (d) A

20. 40% of the people read newspaper X , 50% read newspaper Y and 10% read both the papers. What percentage of the people read neither newspaper?
- (a) 10% (b) 15%
 (c) 20% (d) 25%

DIRECTIONS (Qs. 21–24) : Read the passage below and solve the questions based on it.

5% of the passengers do not like coffee, tea and lassi and 10% like all the three, 20% like coffee and tea, 25% like lassi and coffee and 25% like lassi and tea. 55% like coffee, 50% like tea, and 50% like lassi.

21. The passengers who like only coffee is greater than the passengers who like only lassi by
- (a) 25% (b) 100%
 (c) 75% (d) 0%
22. The percentage of passengers who like both tea and lassi but not coffee, is
- (a) 15 (b) 25
 (c) 40 (d) 75
23. The percentage passengers who like at least 2 of the coffee, tea and lassi, is
- (a) 30 (b) 45
 (c) 50 (d) 60
24. If the number of passengers is 180, then the number of passengers who like lassi only, is
- (a) 10 (b) 18
 (c) 27 (d) 36
25. In a town three newspapers A , B and C are published. 42% of the people in that town read A , 68% read B , 51% read C , 30% read A and B , 28% read B and C , 36% A and C and 18% do not read any paper. Find the % of population of town that reads all the three. [SBI PO-2011]
- (a) 15% (b) 25%
 (c) 20% (d) 35%
 (e) None of these

DIRECTIONS (Qs. 26 - 29) : Answer these questions on the basis of the information given below :

In a survey of 1000 boys conducted in an area, it is found that 65% play Cricket, 48% play Football and 40% play Hockey. Of the total, 30% play both Football and Cricket, 25% play Football and Hockey, while 24% play Cricket and Hockey. Only 5% do not play any of the three games. [SBI PO-2011]

26. Find the number of players who play Football but not Hockey.
- (a) 180 (b) 230
 (c) 350 (d) Can't be determined
 (e) None of these
27. How many play all the three above-mentioned games?
- (a) 180 (b) 240
 (c) 230 (d) 210
 (e) None of these
28. How many play Hockey but neither Cricket nor Football?
- (a) 140 (b) 320
 (c) 120 (d) Can't be determined
 (e) None of these
29. Find the percentage of players who play only Football.
- (a) 12 (b) 14
 (c) 32 (d) 18
 (e) None of these