Answer & Solutions

Level - I

1. 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

2. 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

3. 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

4. Let $S = \{0, 1, 5, 4, 7\}$. Then the total number of subsets of S is
(a) 64 (b) 32
(c) 40 (d) 20

5. 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

6. 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

7. 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) $X \supseteq Y$

8. $A \cup B = A$, then
(a) $A \subset B$ (b) $B \subset A$
(c) $A \not\subset B$ and $B \not\subset A$ (d) None of these

Hints & Solutions

Level-I

1. **(d)** Total number of students = 100 + 50 – 25 = 125

2. **(a)** **3.** **(c)** **4.** **(b)** **5.** **(b)**

6. **(a)** Total number of students = 100
Let E denote the students who have passed in English.
Let M denote the students who have passed in Maths.
$\therefore$ $n(E) = 75$, $n(M) = 60$ and $n(E \cap M) = 45$
we know $n(E \cup M) = n(E) + n(M) - n(E \cap M)$
$= 75 + 60 - 45 = 90$
Required number of students = 90 – 45 = 45

7. **(a)** **8.** **(b)**