

Comprehensive Test Series-08 Sets

TIME: 1hr

MM: 25

General Instructions:

- All Questions are compulsory.
 - Marks are given alongwith the questions individually.
 - Use of calculator is not permitted.
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- Q. 1.** In a survey of 25 students it was found that 15 had taken Mathematics, 12 had taken Physics and 11 had taken Chemistry, 5 had taken Mathematics and Chemistry, 9 had taken mathematics and Physics, 4 had taken Physics and Chemistry and 3 had taken all the three subjects. Find the number of students that had
- (i) only Chemistry
 - (ii) only Mathematics
 - (iii) only Physics
 - (iv) Physics and Chemistry but not Mathematics
 - (v) Mathematics and Physics but not Chemistry
 - (vi) only one of the subjects
 - (vii) at least one of the three subjects
 - (viii) None of the subjects
- Q. 2** A class has 175 students. The following description gives the number by students studying one or more of the subjects in this class. Mathematics 100; Physics 70; chemistry 46; mathematics and physics 30; mathematics and chemistry 28; physics and chemistry 23; mathematics, physics and chemistry 18.
Find (i) how many students are enrolled in mathematics alone; physics alone and chemistry alone,
(ii) the number of students who have not offered any of these subjects.
- Q.3** If $A = \{-1, 1\}$, form the set $A \times A \times A$.
- Q. 4** If $A = \{1, 2, 3, 4\}$ and $x, y \in A$, form the set of all ordered pairs (x, y) such that x is a divisor of y .
- Q.5** Let $A = \{1, 2, 3, 4, \dots, 14\}$. Define a relation R from A to A by $R = \{(x, y) : 3x - y = 0, x, y \in A\}$. (i) Write R in roster form. (ii) Write its domain, co-domain and range, (iii) Depict this relationship by an arrow diagram.
- Q.6** Find the domain and the range of the following functions:
(i) $f(x) = \sqrt{16 - x^2}$ (ii) $f(x) = \frac{1}{\sqrt{9 - x^2}}$