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Questions:

5 Marks

1. Find the union of each of the following pairs of sets :
   (i) X = {1, 3, 5} Y = {1, 2, 3}
   (ii) A = { a, e, i, o, u} B = {a, b, c}
   (iii) A = {x : x is a natural number and multiple of 3} B = {x : x is a natural number less than 6}
   (iv) A = {x : x is a natural number and $1 < x \leq 6$ } B = {x : x is a natural number and $6 < x < 10$ }
   (v) A = {1, 2, 3}, B = ϕ

2. If A = {1, 2, 3, 4}, B = {3, 4, 5, 6}, C = {5, 6, 7, 8 }and D = { 7, 8, 9, 10 }; find
   (i) A ∪ B
   (ii) A ∪ C
   (iii) B ∪ C
   (iv) B ∪ D
   (v) A ∪ B ∪ C
   (vi) A ∪ B ∪ D
   (vii) B ∪ C ∪ D

3. If A = {x : x is a natural number }, B = {x : x is an even natural number}
   C = {x : x is an odd natural number}andD = {x : x is a prime number }, find
   (i) A ∩ B
   (ii) A ∩ C
   (iii) A ∩ D
   (iv) B ∩ C
   (v) B ∩ D
   (vi) C ∩ D

4. If A = {3, 6, 9, 12, 15, 18, 21}, B = { 4, 8, 12, 16, 20 }, C = { 2, 4, 6, 8, 10, 12, 14, 16 }, D = {5, 10, 15, 20 }; find
   (i) A − B (ii) A − C (iii) A − D (iv) B − A
   (v) C − A (vi) D − A (vii) B − C (viii) B − D
   (ix) C − B (x) D − B (xi) C − D (xii) D − C

5. Show that for any sets A and B, A = (A ∩ B) ∪ (A − B) and A ∪ (B − A) = (A ∪ B)

2 Marks

6. Write the solution set of the equation $x^2 + x - 2 = 0$ in roster form.

7. Write the set A = {1, 4, 9, 16, 25, . . . } in set-builder form.

8. Write the set $\left\{\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \frac{6}{7}\right\}$ in the set-builder form.

9. Let A = { a, e, i, o, u } and B = { a, i, u }. Show that A ∪ B = A

10. Let X = {Ram, Geeta, Akbar} be the set of students of Class XI, who are in school hockey team. Let Y = {Geeta, David, Ashok} be the set of students from Class XI who are in the school football team. Find X ∪ Y and interpret the set.

11. Consider the sets A and B of Example 12. Find A ∩ B.