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Uka Tarsadia University
1st Internal Examination, BCOM 1st Semester
030100130 Business Mathematics

Date: 30/08/2017

Marks: 50
Time: 2 hrs.

Q-1 Answer the following. (Any Eight)

[16]

1. Define: finite set and infinite set with example.
2. Define: union of two sets with example.
3. If $A = \{a, b, c, d, e\}$ and $B = \{b, d, f\}$ then find $A \cup B$ and $A \cap B$.
4. Simplify: $A \cup A' = \dots\dots\dots$ And $A \cap A' = \dots\dots\dots$
5. If $A = \{a, b, c\}$ then find all the subsets of A.
6. If $A = \{1, 2, 3\}$ and $B = \{3, 4, 5\}$ then find $A - B$.
7. If $f: N \rightarrow N, f(x) = x + 3$, find the range of f.
8. Define: odd function.
9. If $f: R \rightarrow R, f(x) = 3x + 5$, find f^{-1} .

Q-2 Answer the following. (Any Two)

[20]

1. If $A = \{-3, -2, 2, 0\}$ and $B = \{3, 2, -2, 0\}$ then find
(1) $A \times B$ (2) $A \cup B$ (3) $A \cap B$ (4) $A - B$ (5) $B - A$.
2. State the De Morgan's law for two sets A and B and verify them by taking
 $U = \{1, 2, 3, \dots, 10\}, A = \{1, 2, 4, 6, 8\}$ and $B = \{2, 3, 6, 7, 9\}$.
3. If $f: R \rightarrow R, f(x) = 7 - 3x$ and $g(x) = 5x + 4$ then find the following:
(1) $f \circ g$ (2) $g \circ f$ (3) $f \circ f$ (4) $g \circ g$.

Q-3 Answer the following in detail. (Any Two)

[14]

1. If $A = \{1, 2, 5, 6, 8\}, B = \{2, 4, 6, 10, 11\}$ and $C = \{1, 2, 3, 5, 6, 11, 12\}$ then verify:
(1) $(A \cup B) \cup C = A \cup (B \cup C)$
(2) $(A \cap B) \cap C = A \cap (B \cap C)$.
2. If $A = \{5, 6, 7\}, B = \{7, 8\}$ and $C = \{5, 8\}$ then verify the result:
 $A \times (B - C) = (A \times B) - (A \times C)$.
3. If $A = \{1, 2, 3\}, B = \{2, 4, 7\}$ and $f: A \rightarrow B, f = \{(1, 2), (2, 4), (3, 7)\}$ and
 $g: B \rightarrow A, g = \{(2, 1), (4, 2), (7, 3)\}$ find (1) $g \circ f$ (2) $f \circ g$.