

Fifth Semester B. Sc. IT
Examination Aug/Sep-2015

Mathematics-III

Time: 3Hours

Max. Marks:-75

SECTION-A

Answer any five questions.

(5*5)

1. Prove that: $A \cup (B \cap C) = (A \cup B) \cap C$.
2. Comment on the subsets.
3. What are Venn diagrams? Illustrate certain relationship between sets by Venn diagrams.
4. In a committee, 50 speak French, 20 speak Spanish & 10 speak both Spanish & French. How many speak at least 1 of these two languages.
5. A Survey shows that 63% of Indians like cheese whereas 76% like apples. If x% of Indians like both cheese & apples, find the value of x.
6. Clarify the Relation with the help of examples.
7. Comment on the following:-
 - a. Partial Ordering Relations
 - b. n-ARY Relations

SECTION-B

Answer any two questions.

(10*2)

8. What is Normal Forms? Describe DNF & CNF.
9. Solve it: - If R is a relation in $N \times N$, defined by $(a, b) R(c, d)$ if and only if $a + b = d + c$, show that R is an equivalence relation.
10. Discuss some important functions & their Graphs.

SECTION-C

Answer any two questions.

(15*2)

11. Elaborate the following Questions:-

- a. Show that the degree of any vertex in a simple graph of vertices cannot exceed $n-1$.
- b. Discuss Complementary Graph & Bipartite Graph in detail.

12. Explain the following Questions:-

- a. Prove that in any graph, there is an even number of vertices of odd degree.
- b. Show the maximum number of edges in a simple graph with n vertices is $=n(n-1)/2$.

13. Discuss Rooted Tree with the help of examples. Describe the terminology of a rooted tree.