TUTORIAL-3

Programme	**:**	**B.Tech.(AI, CE, CG, CY)**	**Semester: II**
Course	**:**	**Discrete Mathematics and Graph Theory**	**Code: MAT2002**
Faculty	**:**	**Dr. Sneha Jaiswal**	**Slot: F11+F12+F13**
Time	**:**	**1 hr.**	**Max. Marks: 20**

1. Let Q (x, y, z) denote the statement "$x^2 + y^2 = z^2$". What is the truth value of Q (3,4,5)? What is the truth value of Q (2,2,3)? How many values of (x, y, z) make the predicate true?

2. Express the statements given below using predicated and quantifiers:

   a. Every computer science student must take a discrete mathematics course.

   b. Everybody must take a discrete mathematics course or be a computer science student.

3. What rules of inference are used in this famous argument?

"All men are mortal. Socrates is a man. Therefore, Socrates is mortal."

4. For each of these collections of premises, what relevant conclusion or conclusions can be drawn? Explain the rules of inference used to obtain each conclusion from the premises.

a) "If I take the day off, it either rains or snows." "I took Tuesday off or I took Thursday off." "It was sunny on Tuesday." "It did not snow on Thursday."

b) "If I eat spicy foods, then I have strange dreams." "I have strange dreams if there is thunder while I sleep." "I did not have strange dreams."

c) "I am either clever or lucky." "I am not lucky." "If I am lucky, then I will win the lottery."

d) "Every computer science major has a personal computer." "Ralph does not have a personal computer."

"Ann has a personal computer."

e) "What is good for corporations is good for the United States." "What is good for the United States is good for you." "What is good for corporations is for you to buy lots of stuff."

f) "All rodents gnaw their food." "Mice are rodents." "Rabbits do not gnaw their food." "Bats are not rodents."