DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Mid Semester Examination – Oct 2019

Course: S.Y.B.Tech(CSE) **Sem: I**

Subject Name: Discrete Mathematics **Subject Code: BTCOC302**

Max Marks: 20 **Date:- 04/10/2019** **Duration:- 1 Hr.**

Instructions to the Students:

1. Check that you have received a correct Question paper.
2. Assume suitable data if necessary and mention it clearly
3. Draw NEAT labeled diagrams wherever necessary

Q. No.	Question	Course Outcome	BT Level	Marks
1	Attempt any **six Questions** 1. What is Existential Quantifier? 2. For two sets A & B, draw Venn diagrams to represent $A \cup B$ & $A \cap B$ 3. Range of a function is a. A maximal set of numbers of which a function is defined b. The maximal set of numbers which a function can take values c. It is set of natural numbers for which a function is defined d. None of the above 4. Find Symmetric closure of the relation R = { (1,2), (2,2),(2,3),(4,2), (4,1),(4,4) } 5. Write in symbolic form: If I finish my homework before dinner and it does not rain, then I will go to play. 6. Define Equivalence relation. 7. What is the difference between Set and Multiset? 8. How to convert Predicate to a proposition. Explain with suitable example.	CO-1, CO2	1	(1*6 =6 Marks)
2	Attempt any **two** of the following **A.** Let P(x,y) denote the statement "x+y =5". Write in simple English, the expressions : (i) $\exists x \exists y P(x)$ (ii) $\forall x \exists y P(x)$ What universes of disclosure make it true? **B.** State and explain The Sum rule and The product rule in Counting. A student can select a project from 3 lists where the lists contain 22, 17 and 19 projects. How many projects are there for a student to select? Which rule to apply? Justify. **C:** What are the constraints for a relation to be (i) reflexive, (ii) transitive and (iii) symmetric?	CO-1 CO-2	2,3	(2*3 =6 Marks)

3	Attempt any **one** of the following A. Among 100 students, 32 study Mathematics, 20 study Physics, 45 study Biology, 15 study Mathematics and Biology, 7 study Mathematics and Physics, 10 study Physics and Biology, and 30 do not study any of the three subjects. a. Draw the Venn diagram b. Find the number of students studying all three subjects c. Find the number of students studying exactly one of the three subjects B. Six boys and six girls are to be seated in a row, how many ways can they be seated if, i) All boys are seated together and all girls are seated together. ii) Boys Occupy two end of the row.	CO-1, CO-3 CO-4	3 3	(1* 8 = 8 Marks)