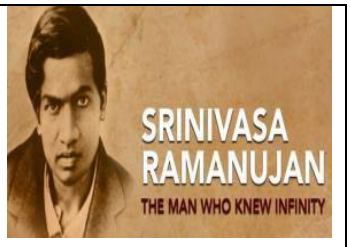
	SRM Institute of Science and Technology **Kattankulathur** **DEPARTMENT OF MATHEMATICS** **18MAB302T-DISCRETE MATHEMATICS FOR ENGINEERS** **UNIT–III MATHEMATICAL LOGICS** **Tutorial Sheet -1**	
Sl.No.	**Questions**	**Answer**
	Part – A	
1	Construct the truth table for (a) $\neg(\neg P \vee \neg Q)$ (b) $\neg(\neg P \wedge \neg Q)$	
2	Construct the truth table for $(p \rightarrow q) \wedge (q \rightarrow p)$	
3	Write the following statements in symbolic form. If either Ravi takes calculus or Raju takes sociology, then Uma will take English.	
4	Express the statement, "The crop will be destroyed if there is a flood" in symbolic form	
5	Check the following proposition is tautology or not $((p \rightarrow q) \rightarrow r) \vee \neg p$	
	Part – B	
6	Using truth table verify that the proposition $(p \wedge q) \wedge \neg(p \vee q)$ is a contradiction.	
7	Is the formula $q \vee (p \wedge \neg q) \vee (\neg p \wedge \neg q)$ is a tautology	
8	Without using truth tables, show that $q \vee (p \wedge \neg q) \vee (\neg p \wedge \neg q)$ is a tautology	
9	Prove that p $\rightarrow q$ and its contrapositive $(\neg q \rightarrow \neg p)$ are equivalent.	
10	Determine whether the compound proposition $\neg(q \rightarrow r) \wedge r \wedge (p \rightarrow q)$ is tautology or contradiction	