SRM Institute of Science and Technology
College of Engineering and Technology
Department of Mathematics
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Academic Year: 2023-2024 (ODD)
Unit III Tutorial sheet - 1

Date: 16/08/2023

Course Code &Title: 18MAB302T-Discrete Mathematics for Engineers
Year & Sem: III/V

Q. No	Questions	Answer Keys
1	Write the truth table of (i) $p \vee \left(\neg p \rightarrow \left(q \vee \left(q \rightarrow \neg r \right) \right) \right)$ (ii) $p \vee \left(\neg p \rightarrow \left(q \vee \left(q \rightarrow \neg r \right) \right) \right)$	
2	Check the following propositions are logically equivalent or not (i) $\neg \left(\left(\neg p \wedge q \right) \vee \left(\neg p \wedge \neg q \right) \vee \left(p \wedge q \right) \right) \equiv p$ (ii) $p \rightarrow \left(q \rightarrow r \right) \equiv \left(p \wedge q \right) \rightarrow r$ (iii) $(\neg P \wedge (\neg Q \wedge R)) \vee (Q \wedge R) \vee (P \wedge R) <=> R$	(i) Not Equivalent (ii)Equivalent (iii)Equivalent
3	Show that $\left[\left(p \rightarrow q \right) \wedge \left(q \rightarrow r \right) \right] \rightarrow \left(p \rightarrow r \right)$ is a tautology	
4.	Without using truth table prove the following $\left(\neg p \vee q \right) \wedge \left(p \wedge \left(p \wedge q \right) \right) \equiv p \wedge q$	
5.	Without using truth table prove the following $\left[\left(p \vee q \right) \wedge \left(p \rightarrow r \right) \wedge \left(q \rightarrow r \right) \right] \rightarrow r$ is tautology.	
6.	Show that the following argument is a valid argument "If I pass B.Tech with high CGPA then I will be assured of a good job. If I am assured of a good job then my parents will be happy. My parents are not happy. Therefore, I do not pass B.Tech with high YGPA"	
7.	Show that the following argument is a valid argument "If the Germany has good forward striker and the Argentina have weak mid fielders then Germany can beat Argentina. If Germany can beat Argentina then Germany can beat Brazil. The Germany cannot beat the Brazil. Therefore either Germany does not have good forward strikers or the Argentina has strong mid-fielders."	
8.	$\sim \left(p \vee q \right) \vee \left(p \wedge \sim q \right) \equiv ?$	$\sim q$
9.	$\left(\neg p \vee q \right) \wedge \left(p \wedge \left(p \wedge q \right) \right)$ is logically equivalent with ?	$p \wedge q$
10.	Write the following statements in symbolic form. If either Ravi takes calculus or Raju takes sociology, then Uma will take English.	