

Date: 16/08/2023

Course Code & Title: 18MAB302T-Discrete Mathematics for Engineers

Year & Sem: III/V

Q. No	Questions	Answer Keys
1	Show that s is a valid conclusion from the premises $p \rightarrow \neg q, q \vee r, \neg s \rightarrow p, \neg r$.	
2	Show that t is a valid conclusion from the premises $p \rightarrow q, q \rightarrow r, r \rightarrow s, \neg s, p \vee t$.	
3	Show that r is a valid conclusion from the premises $p \vee q, q \rightarrow r, p \rightarrow s, \neg s$	
4.	Using the principle of Mathematical induction show that $10^{n+1} + 10^n + 1$ is divisible by 3 $\forall n \in \mathbb{N}$	
5.	Using the principle of Mathematical induction show that $4^{n+1} + 5^{2n-1}$ is divisible by 21 $\forall n \in \mathbb{N}$	
6.	Express the statement, "The crop will be destroyed if there is a flood" in symbolic form	
7.	Write the converse, inverse and contrapositive form of $p \rightarrow q$.	Converse $q \rightarrow p$ Inverse $\neg p \rightarrow \neg q$ Contrapositive $\neg q \rightarrow \neg p$
8.	Let p, q and r be the following statement: p : I will study discrete mathematics. q : I will watch T.V. r : I am in a good mood. Write the following statements in terms of p, q, r and logical connectives. A). If I do not study discrete mathematics and I watch T.V., then I am in a good mood B) If I am in a good mood, then I will study discrete mathematics or I will watch T.V. C) If I am not in a good mood, then I will not watch T.V. or I will study discrete Mathematics. D) I will watch T.V. and I will not study discrete mathematics if and only if I am in a good mood.	$\sim q$
9.	Prove by using indirect method $\neg q, p \rightarrow q, p \vee r \Rightarrow r$	
10.	If A works hard then B or C will enjoy themselves. If B enjoys himself then A will not work hard. If D enjoys himself then C will not work hard. Therefore, If A works hard D will not enjoy himself. Translate the above into symbolic statements.	