ACE
Engineering College

(An Autonomous Institution)

Question Paper Code: CS401PC

ACE-R20

Semester End Examination
II B. Tech- II Semester- AUGUST -2022
DISCRETE MATHEMATICS
Common to CSE,IT

Time: 3 Hours **Max. Marks: 70**

H. T. No										

Answer any 5 Questions out of 8 Questions from the following

Q.No	Question	Marks
1. a)	Explain various Rules of Inference with example.	7
b)	Show that $\neg(p \vee (\neg p \wedge q))$ and $\neg p \wedge \neg q$ are logically equivalent with truth table.	7
2. a)	Use a membership table to show that $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$.	7
b)	What is Function? Explain different types with examples.	7
3. a)	What is an Algorithm? Write and Explain Binary Search Algorithm.	7
b)	Show that if n is a positive integer, then $1 + 2 + \ldots + n = n(n+1)/2$ using mathematical induction.	7
4. a)	Explain Baye's Theorem with example.	7
b)	Solve the recurence relation $a_n = a_{n-1} + 2a_{n-2}$ with $a_0=2$ and $a_1=7$?	7
5. a)	What is Graph? Explain different types of Graphs.	7
b)	Explain Isomorphism with example. Give some examples for non Isomorphic Graphs.	7
6. a)	What is Tree? Explain various applications of Trees.	7
b)	Explain Depth-first Search Algorithm with example.	7
7. a)	Find the number of integers in $1 \leq n \leq 100$ which are divisible by either 2 or 3 or 5.	7
b)	For any fixed integer $n>1$, prove that the relation " congruent modulo n" is an equivalence relation on set of integers Z.	7
8. a)	Explain Properties of Binary Relations in a Set.	7
b)	Discuss about various Proof Methods.	7