INSTITUTE OF ENGINEERING & MANAGEMENT
SALT LAKE, KOLKATA
Affiliated to MAKAUT and approved by AICTE

Degree:B.TECH, Stream:CSE
Term – I, FOURTH Semester Examination, FEBRUARY -2023
Subject Code: PCCCS401
Subject Name: Discrete Mathematics
Full Marks:30   Duration:1 Hour

	Part - A **Answer the following questions** (1 X 10)	
1.	What are the contrapositive, the converse and the inverse of the conditional statement "If I study then I will pass in Exam"?	1,CO2
2.	Write the symbolic representation and give its contra-positive statement of "If it rains today, then I buy an umbrella".	1,CO2
3.	When do you say that two compound propositions are equivalent?	1,CO2
4.	State Division algorithm with an example.	1,CO1
5.	State "Fundamental theorem of arithmetic".	1,CO1
6.	Define the "Well ordering principle" .	1,CO1
7.	State an equivalent statement of $p \vee q$.	1,CO2
8.	Write the symbolic form and negate the following statements. i) Everyone should help his neighbours, or his neighbours will not help him. ii) Everyone agrees with someone, and someone agrees with everyone.	1,CO2
9.	How many total relations can be defined on a set of n elements?	1,CO1
10	Perform Prime factorization of 7007.	1,CO2
	Part - B **Attempt 2 questions** **Each question carries 5 Marks** (5 X 2)	
6.	For integers a,b, and c show that if a|b and a|c, then a|bx+cy for arbitrary integers x and y.	5,CO1
	or	
6.	Show that if $a \equiv b \pmod n$ and $c \equiv d \pmod n$, then $a + c \equiv b + d \pmod n$.	5,CO1
7.	Show that $(p \vee q) \wedge (\neg p \vee r) \to (q \vee r)$ is a tautology.	5,CO2
	or	
7.	Show that $(p \vee q) \wedge \neg p \to q$ is a tautology.	5,CO2

	Part - C **Attempt 1 question** **Each question carries 10 Marks** (10 X 1)	
8.	Using the Euclidean algorithm, find gcd of 315 and 4235 and also find integers x and y such that gcd(315,4235)=x.315+y.4235.	10,CO1
	or	
8.	Compute the GCD (540, 168). If it is expressed as 540x+168y then compute the values of x and y.	10,CO1

Instructions of Question Mappingvar

1. Any question and its alternative should be from the same CO & Bloom's Taxonomy Level.
2. Bloom's Taxonomy Level (BLLevel) should be **replaced** with the **following keywords**
   a. For BL1 – Remember
   b. For BL2 – Understand
   c. For BL3 – Apply
   d. For BL4 – Analyse
   e. For BL5 – Evaluate
   f. For BL6 – Create
3. COx should be replaced by appropriate Course Outcome number 1/2/3/4/5/6/7