

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

statement "If I study then I will pass in Exam"? Write the symbolic representation and give its contra-positive statement of "If it rains today, then I buy an umbrella". When do you say that two compound propositions are equivalent? LCO. State Division algorithm with an example. State Division algorithm with an example. LCO. State "Fundamental theorem of arithmetic". Define the "Well ordering principle". State an equivalent statement of $p \lor q$. 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. How many total relations can be defined on a set of n elements? Perform Prime factorization of 7007. Part - B Attempt 2 questions Each question carries 5 Marks (5 X 2) For integers a,b, and c show that if a b and a c, then a bx+cy for arbitrary integers x and y. Or Show that if $a \equiv b \pmod{n}$ and $c \equiv d \pmod{n}$, then $a + c \equiv b + d \pmod{n}$. Show that $(p \lor q) \land (\neg p \lor r) \rightarrow (q \lor r)$ is a tautology. 5,CO. Show that $(p \lor q) \land (\neg p \lor r) \rightarrow (q \lor r)$ is a tautology.			
What are the contrapositive, the converse and the inverse of the conditional statement "If I study then I will pass in Exam"? Write the symbolic representation and give its contra-positive statement of "If it rains today, then I buy an umbrella". When do you say that two compound propositions are equivalent? State Division algorithm with an example. State Division algorithm with an example. State "Fundamental theorem of arithmetic". Define the "Well ordering principle". State an equivalent statement of $p \lor q$. 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. How many total relations can be defined on a set of n elements? Perform Prime factorization of 7007. 1,CO Perform Prime factorization of 7007. 1,CO Show that if $a \equiv b \pmod{n}$ and $c \equiv d \pmod{n}$, then a bx+cy for arbitrary integers x and y. Or Show that if $a \equiv b \pmod{n}$ and $c \equiv d \pmod{n}$, then $a \vdash b \pmod{n}$. Show that $a \vdash b \pmod{n}$ and $a \vdash b \pmod{n}$ and $a \vdash b \pmod{n}$ are $a \vdash b \pmod{n}$.			
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"If it rains today, then I buy an umbrella". 3. When do you say that two compound propositions are equivalent? 1,CO 4. State Division algorithm with an example. 1,CO 5. State "Fundamental theorem of arithmetic". 1,CO 6. Define the "Well ordering principle". 1,CO 7. State an equivalent statement of $p \lor q$. 1,CO 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. 9. How many total relations can be defined on a set of n elements? 1,CO 10. Perform Prime factorization of 7007. 1,CO 11. 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. Or 6. Show that if $a \equiv b \pmod{n}$ and $c \equiv d \pmod{n}$, then $c \equiv b + d \pmod{n}$. Show that $c \equiv b + d \pmod{n}$ and $c \equiv b \pmod{n}$ are $c \equiv b + d \pmod{n}$.	1.		1,CO2
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y . Show that $(p \lor q) \land \neg p \to q$ is a fautology. D.CO.	7.	Show that $(p \lor q) \land \neg p \rightarrow q$ is a tautology.	5,CO2

	Part - C		
	Attempt 1 question		
Each question carries 10 Marks (10 X 1)			
3.		10,CO1	
	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.		
	integers x and y such that gea(515,4255) x.515 y.4255.	ļ	
	or		
3.	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