	00114 - DISCRETE MATHEMATICS [S] [SUMMER 19-20]
Q.	Questions. (Any five)
1.	Find the greatest common divisor and least common multiple of 651 and 189 using prime factorization. (Show details)
2.	Encrypt the message "DO NOT PASS GO" applying the encryption function f(p) = (p - 9) mod 26. (Show details)
3.	Let A = {0, 2, 4, 6, 8}, B = {0, 1, 2, 3, 4}, and C = {0, 3, 6, 9}. What are **A U B U C** and **A ∩ B ∩ C**? Also, show in a Venn diagram.
4.	Let A = {x | x is a prime number and x≤5}. Find out the **power set** of the set A and the **cardinality** of the power set of set A.
5.	Translate each of the statements into logical expressions using predicates, quantifiers, and logical connectives. Let the domain consists of the students in your class. a) Someone in your class can speak Hindi. b) Everyone in your class is friendly. c) There is a person in your class who was not born in California. d) A student in your class has been in a movie. e) No student in your class has taken a course in Java.
6.	Show that $p \wedge (q \vee r)$ and $(p \wedge q) \vee (p \wedge r)$ are logically equivalent using a truth table.
7.	Let p, q and r be the propositions p: You get an A on the final exam. q: You do every exercise in this book. r: You get an A in this class. Write these propositions using p, q, and r and logical connectives. a) You get an A in this class, but you do not do every exercise in this book. b) To get an A in this class, it is necessary for you to get an A on the final. c) You will get an A in this class if and only if you either do every exercise in this book or you get an A on the final. To get an A on the final, it is sufficient that you do every exercise in this book.