United College of Engineering and Research, Prayagraj
Department of Computer Science

B.Tech(2020-21)
Discrete Structures and Theory of Logic(KCS 303)
Assignment-4

QNo.	Question	CO Type	Bloom's level
1	Obtain all distinct left cosets of $\{0, 3\}$ in the group $(Z_6, +_6)$ and find their union.	CO2	L2
2	Prove that (R,+,*) is a ring with zero divisors, where R is 2x2 matrix and + and * are usual addition and multiplication operations.	CO2	L4
3	Let (A,*) be a monoid such that for every x in A , x*x = e, where e is the identity element. Show that (A,*) is an abelian group.	CO2	L3
4	Let Z be the group of integers with binary operation * defined by a*b = a+b-2 , for all a,b ∈ Z . Find the identity element of the group (Z,*).	CO2	L2
5	What do you mean by cosets of a subgroup? Consider the group Z of integers under addition and the subgroup H = {. . . ., -12, -6, 0, 6, 12, ... } considering of multiple of 6. 1. Find the cosets of H in Z. 2. What is the index of H in Z.	CO2	L4
6	What is Ring? Define elementary properties of Ring with example.	CO2	L1
7	Prove or disprove that intersection of two normal subgroups of a group G is again a normal subgroup of G.	CO2	L4
8	Consider the group G = {1, 2, 3, 4, 5, 6} under multiplication modulo 7. 1. Find the multiplication table of G. 2. Find $2^{-1}, 3^{-1}, 6^{-1}$. 3. Find the orders and subgroups generated by 2 and 3. 4. Is G cyclic?	CO2	L3

Bloom's Taxonomy levels (1- Remembering, 2- Understanding, 3- Applying, 4- Analyzing, 5- Evaluating, 6- Creating)

CO - Course Outcome