MODERN ALGEBRA (MC-207)
2024 (ODD SEMESTER) B.Tech III rd SEMESTER
PRACTISE ASSIGNMENT

Q1 A non-empty subset H of a finite group G is a subgroup of G if and only if $ab \in H$ whenever $a, b \in H$

Q2 Prove that every subgroup of an abelian group is normal.

Q3 Let G be a group and $H \leq G$. Prove that the order of a subgroup divides the order of the group.

Q4 Confider the group $G = \mathbb{Z}_{12}$, identify all the subgroup of this group. Are they all normal?

Q5 A subgroup H of a group G is normal if and only if left coset of H in G is a right coset of H in G.

Q6 Give an example of a group G having a subgroup H and two elements a, b in G such that Ha = Hb but aH not equal to bH.

Q7 Show by an example that abelian groups may not be cyclic.

Q8 Show that the set S of all 2 × 2non-singular matrices over R is a Group under matrix multiplication.