EXAM FOR "ALGEBRAIC STRUCTURES" (6ALGS)
SUMMER SEMESTER 2024/2025

QUESTIONS SET NO. 5

1.

Give definition of characteristic of a field. Illustrate this notion by examples. What integers can be characteristic of a field?

2.

Find all subgroups of $\mathbb{Z}/8\mathbb{Z}$. Among those subgroups which are normal, find the quotients of $\mathbb{Z}/8\mathbb{Z}$ by those subgroups.

3.

Let R be a ring with identity, and $a, b \in R$. Prove that if $1 - ab$ is an invertible element in R, then $1 - ba$ is an invertible element in R too.