ASSIGNMENT – 4
SUBJECT: ENGINEERING MATHEMATICS –III(MAT 2155)

Instructions:

1. Write your **Name, Roll No, Registration No** and put **signature on the top of the answer sheet.**

2. Scan your answer sheet as **PDF file** and name the file as **Roll No. <space> Name <space> Registration No.**

Question Allotment

Roll numbers	Question number
Roll Numbers 1-35	**1A and 1B**
Roll Numbers 36 – last and re-registered	**2A and 2B**

1A. Let G be a group and a ϵ G.

(i) Define N(a)={x ϵG / ax=xa}. Show that N(a) is a subgroup of G.

(ii) Let H= $\cap$N(a). Show that H is a normal subgroup of G.

1B. Prove that the fourth root of unity forms an abelian group under multiplication.

2A. If every element of a group G other than the identity has order 2, prove that the group G is abelian.

2B. Prove that H is a normal subgroup of G iff H is a subgroup of index 2 in G.