

North Gauhati College
Department of Mathematics

SEMESTER III(HONOURS)
HOME ASSIGNMENT I 2021

MAT-HC-3026
Group Theory - I

August 2021

TOTAL MARKS: 20

INSTRUCTIONS TO CANDIDATES

1. This assignment paper contains **Six (6)** questions and comprises **Two (2)** printed pages.
2. Each question carry **Five** marks. Answer any **Four** of all questions.
3. Submit the assignment as a single **PDF** file through the online portal of our college website under section “Assignments” and send a copy to the email id mathngc1969@gmail.com.
4. Write your **Name**, **GU Roll No.**, and **Registration Number** in the assignment .
5. Submission **Due Date** is on or before **10th August, 2021**.

*(Answer any **Four**)*

1. Prove that set of natural number is a group with respect to addition.
2. Show that cyclic group is abelian.
3. Prove that if G is a finite group and H is a subgroup of G , then $O(H)$ divides $O(G)$.
4. If G is a finite group, show that for any $a \in G$, $a^{O(G)} = e$, where e is the identity element of the group G .
5. Prove that centre of a group G is a subgroup of the group G .
6. Prove that a finite group of prime order is abelian.

END OF PAPER