

North Gauhati College
Department of Mathematics

SEMESTER III
HOME ASSIGNMENT I 2021

MAT-SE-3024
Combinatorics and Graph Theory

August 2021

TOTAL MARKS: 20

INSTRUCTIONS TO CANDIDATES

1. This assignment paper contains **Four (4)** questions and comprises **Two (2)** printed pages.
2. Each question carry **Five** marks. Answer 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 **15th August, 2021**.

1. Prove that

$$C(2n, 2) = 2C(n, 1) + n^2$$

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2. How many solutions are there to

$$x_1 + x_2 + x_3 + x_4 + x_5 = 16$$

where each $x_i \geq 27$.

3. Prove that

$$C(n + 1, r) = C(n, r) + C(n, r - 1).$$

4. Find the number of integers between 1 and 250 that are divisible by any of the integers 2, 3 and 7.

END OF PAPER