

North Gauhati College
Department of Mathematics

SEMESTER III(GENERIC & REGULAR)
ASSIGNMENT II

MAT-HG-3016/MAT-RC-3016
Differential Equations

August 2021

TOTAL MARKS: 10

INSTRUCTIONS TO CANDIDATES

1. This assignment paper contains **Four (4)** questions and comprises **Two (2)** printed pages.
2. Each question carry **Five** marks. Answer any **Two** 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 **7th August, 2021**.

(Answer any **Two**)

1. Solve the initial-value problem

$$\frac{d^2y}{dx^2} - 6\frac{dy}{dx} + 25y = 0$$

with $y(0) = -3$ and $y'(0) = -1$.

2. Solve using method of variation of parameters

$$(x^2 + 1)\frac{d^2y}{dx^2} - 2x\frac{dy}{dx} + 2y = 6(x^2 + 1)^2.$$

3. Find the general solution of the Cauchy-Euler equation

$$x^2\frac{d^2y}{dx^2} - 2x\frac{dy}{dx} + 2y = x^3.$$

4. Solve:

$$\frac{d^2y}{dx^2} - 2\frac{dy}{dx} - 3y = 2e^x - 10\sin x.$$

END OF PAPER