লক্ষীমপুৰ তেলাহী কমলাবৰীয়া মহাবিদ্যালয়

LAKHIMPUR TELAHI KAMALABORIA COLLEGE

Azad, North Lakhimpur, Assam – 787031

ASSIGNMENT
B.Sc.2nd Semester 2020
Mathematics (Major)
Paper:C2.2 Differential Equations

Date: Sept, 2020   Due date- 01/10/2020   Max mark: 50

All questions are compulsory

1. (a) Solve the differential equation

$$\frac{dy}{dx} + y\sec x = \tan x$$

   (5)

   (b) Solve the following ordinary differential equation

$$x\,dy - (y - x)\,dx = 0$$

   (5)

2. (a) Solve the following differential equation

$$xp^2 + (y - x)p - y = 0$$

   (5)

   (b) Evaluate the Wronskian of the function $\sin x$ and $\cos x$ (5)

3. (a) Solve the following linear differential equation

$$\frac{d^4y}{dx^4} - \frac{d^3y}{dx^3} - 3\frac{d^2y}{dx^2} + \frac{dy}{dx} + 2y = 0$$

   (5)

(b) Solve the following linear homogeneous differential equation

$$(x^3 D^3 + 3x^2 D^2 - 2xD + 2)y = x^3$$

(5)

4. (a) Solve the following linear differential equation

$$\frac{d^4 y}{dx^4} - \frac{d^3 y}{dx^3} - 3\frac{d^2 y}{dx^2} + \frac{dy}{dx} + 2y = 0$$

(10)

(b) Solve the following linear homogeneous differential equation

$$(x^3 D^3 + 3x^2 D^2 - 2xD + 2)y = x^3$$

(10)

Best wishes