

W-3311(A)
M.A./M.Sc.(Fourth Semester) Examination, (Second Chance)

June-2020

MATHEMATICS

Paper - 401

Partial Differential Equation

Time : Three Hours

Maximum Marks : 85

Minimum Pass Marks : 29

Note : Attempt **All** questions.

Unit-I

Q.1. Solve $p^2x + q^2y = z$ by Charpit's methods.

Unit-II

Q.2. Explain all types of boundary value problems.

Unit-III

Q.3. Solve the following Neumann problem for a rectangle.

$$PDE : \nabla^2 u(x, y) = 0 \quad 0 \leq x \leq a, \quad 0 \leq y \leq b$$

$$BC's : u_x(0, y) = u_x(a, y) = 0$$

$$u_y(x, 0) = 0, \quad u_y(x, b) = f(x)$$

Unit-IV

Q.4. Solve the PDE

$$\frac{\partial T}{\partial t}(x, t) = \alpha \frac{\partial^2 T}{\partial x^2}(x, t)$$

With

$$BCs : T(0, t) = 0, \quad \frac{\partial T}{\partial x}(L, t) = q_0$$

$$\& ICs : T(x, 0) = 0, \quad 0 \leq x \leq L$$

Unit-V

Q.5. Derive D'Alembert solution for wave equation.

