Roll No. 22EGJCS113

GLOBAL INSTITUTE OF TECHNOLOGY

B. Tech. II Semester Exam 2022-23

II MID TERM EXAMINATION (II Sem.) 2022-23

2FY2-01 Engineering Mathematics-II

Branch- All Branches

Date/Day- 27/04/2023Tuesday

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. **no supplementary sheet shall be issued in any case.**

Part A(Answer should be given up to 25 words only)
All questions are compulsory

(1) Q.1 Define order of partial differential equation? CO5

(2) Define second order of partial differential equation? CO4

(3) Write a standard form of Clairut's equation? CO3

(4) Solve $\frac{d^4y}{dx^4} - 2\frac{d^2y}{dx^2} + y = 0$? CO3

(5) Write a characteristic equations of Charpit's? CO4

(6) Find the partial differential equation by elimination of a and b from the equation $z = (x + a)(y + b)$? CO4

(7) Define a degree of a partial differential equation? CO5

(8) Find a order and degree of $px + qy = nz$? CO4

(9) Write a Lagrange form of a differential equation ? CO4

(10) Solve $sinpxcosy = cospx\,siny + p$ CO3

10x 2 = 20

Part B Analytical/Problem solving questions
Attempt all questions (word Limit 100)

(1) Find the partial differential equation by eliminating arbitrary function from the from the following equation:$z = e^{xy}\phi(x - y)$ CO4

(2) Solve $y^2p - xyq = x(z - 2y)$ CO4

(3) Solve $\frac{d^3y}{dx^3} - 6\frac{d^2y}{dx^2} + 11\frac{dy}{dx} - 6y = 0$ CO3

(4) Solve $\frac{d^3y}{dx^3} - \frac{d^2y}{dx^2} - \frac{dy}{dx} + y = 0$ CO3

(5) Solve $\frac{d^3y}{dx^3} + a^2\frac{dy}{dx} = sinax$ CO3

5 x 4 =20

Part C(Descriptive/Analytical/Problem Solving/Design Question)
Attempt all questions.

(1) Q.1 Solve the following two dimensional heat conduction equation by the method of separation of variables:

$$\frac{\partial^2 z}{\partial x^2} + \frac{\partial^2 z}{\partial y^2} = \frac{1}{k}\frac{\partial^2 z}{\partial t^2}$$ CO5

(2) Solve $(1 - x^2)\frac{d^2y}{dx^2} + x\frac{dy}{dx} - y = x(1 - x^2)^{3/2}$ CO4

(3) Solve $(x^2)\frac{d^2y}{dx^2} - x\frac{dy}{dx} + 2y = xlogx.$ CO3

3x 10 =30