

Enrol. No. A4955612004

THIRD SEMESTER END TERM EXAMINATION: NOVEMBER, 2013

B. SC. (H) MATHEMATICS

BCM305

DIFFERENTIAL EQUATIONS - I

Time: 3 Hrs

Max Marks: 70

Note: Attempt questions from all sections as directed.

Section - A : Attempt any five questions out of six. Each question carries 06 marks. [30 Marks]

Q1. Solve $(2x + y + 1)dx + (4x + 2y - 1)dy = 0$. (6)

Q2. Solve $x^2p^2 - 2xyp + 2y^2 - x^2 = 0$. (6)

Q3. Find the solution of the differential equation $y = 2xp - yp^2$. Also find the singular solution. (6)

Q4. Find degree and order of the differential equation $= \sqrt{x} \left(\frac{dy}{dx} \right) + k \left(\frac{dy}{dx} \right)$. (3)

Q5. Solve $D^3y + 6D^2y + 11Dy + 6y = 0$. (3)

Q6. Solve $x^2D^2y + 3x^2Dy + xDy + y = \log x + x$. (6)

Q7. Solve $y'' - 2 \tan x \cdot y' + 5y = 0$. (6)

Section - B : Attempt any two questions out of three. Each question carries 10 marks. [20 Marks]

Q7. Find the equation of the orthogonal trajectories of the parabolas $y = kx^2$ where k is the parameter.