Meel Karth.

JAYPEE UNIVERSITY OF INFORMATRION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATION- 2016
B.Tech IInd Semester (BI/BT)

COURSE CODE: 10B11MA212   MAX. MARKS: 25
COURSE NAME: Basic Mathematics II
COURSE CREDITS: 04   MAX. TIME: 1.5 hours

Note: All questions are compulsory. Marks are indicated in square bracket against each question. Use of any type of calculator is not allowed.

Q1. If $Z = \frac{x^2+y^2}{x+y}$, show that $\left(\frac{\partial Z}{\partial x} - \frac{\partial Z}{\partial y}\right)^2 = \frac{4(x-y)^2}{(x+y)^2}$ [5]

Q2. (a) Solve the differential equation $\frac{dy}{dx} = e^{x-y} + x^2 e^{-y}$ [2.5]

(b) Show that the differential equation $(3x^2 + 6xy^2)dx + (6x^2y + 4y^3)dy = 0$ is exact
and then solve it.   [2.5]

Q3. Solve the linear differential equation $(x + 1)\frac{dy}{dx} - 2y = (x + 1)^4$ [5]

Q4. Solve the differential equation $\frac{d^2y}{dx^2} - 64y = (1 + e^x)^2$ [5]

Q5. Solve the differential equation $\frac{d^2y}{dx^2} - 3\frac{dy}{dx} + 2y = xe^{3x} + \sin 2x$ [5]