

FR. CONCEICAO RODRIGUES INSTITUTE OF TECHNOLOGY, VASHI
APPLIED MATHEMATICS-II
UNIT TEST - I

Duration: 1Hr.

Total marks :20

Note: Figures to the right indicate the marks for respective question.

1. Answer any FIVE**[5x2 = 10]**

a) Identify the type of differential equation $(1 + e^{x/y})dx + e^{x/y}\left(1 - \frac{x}{y}\right)dy = 0$

(CO 1 – First order DE)

b) Find the P.I. of $(D^2 + 1)y = \sin x$. (CO 2 – Higher order DE)

c) Find the G.S. for $(2D - 1)^2y = 0$. (CO 2 – Higher order DE)

d) Find I.F. of $(x + y + 1)\frac{dy}{dx} = 1$ (CO 1 – First order DE)

e) Find P.I. of $(D + 2)y = x^3$ (CO 2 – Higher order DE)

f) Reduce the following differential equation into linear differential equation

$$x^3 \frac{dy}{dx} + 2x^2y = y^3 \text{ (CO 1 – First order DE)}$$

2) Answer any ONE. (CO 2 – Higher order DE)**[5x1 = 5]**

a) Solve $\frac{d^2y}{dx^2} + 4y = 4\sec^2 2x$, using variation of parameter.

b) Solve $x^2 \frac{d^3y}{dx^3} + 3x \frac{d^2y}{dx^2} + \frac{dy}{dx} = x^2 \log x$

3) Answer any ONE. (CO 2 – Higher order DE)**[5x1 = 5]**

a) Solve $(D^2 - 1)(D - 1)^2y = e^x + \sin^2 \frac{x}{2}$

b) Solve $\frac{d^2y}{dx^2} - 4\frac{dy}{dx} + 3y = e^x \cos 2x + \cos 3x$