

Terna Engineering College, Nerul

Unit Test:-I

Division:-All

Total Mark:-20

Time: 1 hour

Date 16/2/2015

Sub: APP. MATHS

Q.1 Attempt any five of the following:

[10]

1. Solve $(\tan y + x)dx + (x \sec^2 y - 3y)dy = 0$

2. Find Integrating factor of the differential equation

$$y(1+xy+x^2y^2+x^3y^3)dx + x(1-xy-x^2y^2+x^3y^3)dy = 0$$

3. Solve $\frac{dy}{dx} + \frac{2x}{x^2+1}y = \frac{1}{(x^2+1)^2}$

4. Solve $\frac{d^4y}{dx^4} + y = 0$

5. Solve $\frac{d^4y}{dx^4} + 4\frac{d^3y}{dx^3} + 8\frac{d^2y}{dx^2} + 8\frac{dy}{dx} + 4y = 0$

6. Find particular Integral of $(D^3 + 3D^2 + 3D + 1)y = e^{-x}$

Q.2. Solve $x\frac{dy}{dx} + y = x^3y^6$

$\frac{y dy}{y^7} = x^2 dx$

[5]

OR

Solve $(D^3 - 7D - 6)y = \cosh x \cos x$

[5]

Q.3 Solve $\left(xy^2 - e^{\frac{1}{x^3}}\right)dx - x^2ydy = 0$

[5]

OR

Given $\frac{dy}{dx} = \frac{y^2 - x^2}{y^2 + x^2}$ with $y(0) = 1$. Using Runge-Kutta method of fourth order. Find

y when $x = 0.2$

[5]