UNIT – I

1.Solve $x^2ydx - (x^3 + y^3)dy = 0$

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

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

4.Solve $p^2 + 2py\cot x = y^2$ for p.

5. If 30% of a radioactive substance disappears in 10 days, how long will it take for 90% of it to disappear?

6. If the temperature of the air is 20°C and the temperature of the body drops from 100°C to 80°C in 10 mins. What will be its temperature after 20 mins? When the temperature will be 40°C?

7.Solve $P^2 - 5p + 6 = 0$

8.Solve P(p + y)= x (x + y)

9.Solve the D.E y(2xy+e^x) dx- e^xdy = 0

10.Solve $(x^3 + 3xy^2)\,dx + (y^3 + 3x^2y)\,dy = 0$

UNIT – II

1.Solve $\frac{d^2y}{dx^2} + 2y = x^2e^{3x} + e^x\cos 2x$

2.Find the solution of $\frac{d^2y}{dx^2} + 5\frac{dy}{dx} - 6y = \sin 4x\cos x.$

3.Solve $(D^2 - 4)y = 2\cos^2 x$

4.Solve $(D^2 + 2)y = e^x\cos x$

5.Solve $(D^3 - 1)y = (1 + e^x)^2$

6.Solve $\frac{d^2y}{dx^2} + y = x\cos x$ by the method of variation of parameters.

7.Solve $(D^2 - 2D)y = e^x\sin x$ by the method of variation of parameters

8.Solve the differential equation $(D^2 + 1)y = x^2e^{3x}$

9.Solve $(D^3 + 2D^2 + D)y = x^3$

10.Solve $(D - 2)^2y = 8(e^{2x} + \sin 2x + x^2)$

UNIT – III

1.Find the laplace transform of e^{-3t}[5 sinh4t-3 cos4t]

2.Find the L{t [3 sin2t-2 cos2t] }

3.Evaluate L{$\int_0^t te^{-t}sin2t\,dt$}.

4.Find the L[$\frac{sint}{t}$]

5.Find the laplace transform of $\int_0^\infty \frac{cosat - cosbt}{t}dt.$

6.State First shifting theorem of Laplace transform.