PARUL UNIVERSITY
Faculty Of Engineering & Technology
Department of Applied Sciences & Humanities
1st year B.Tech Programme (All branches)
Mathematics-II (Subject Code :303191152)
ASSIGNMENT

Q:1 Solve the following:

1. $y'' - 6y' + 7y = e^{2x}$.
2. $(D^2 + 25)y = cos\,5\,x$.
3. $y'' - 2y' + y = 3x^2e^x$.
4. $y'' + 2y' + 2y = 0$ for $y(0) = 1, y\left(\frac{\pi}{2}\right) = 0$.
5. Solve $y''' + 6y'' + 3y' - 10y = x$.
6. $(D^2 + 16)y = e^x\,cos\,4\,x$.
7. $y''' + y'' - 16y' + 20y = 0; y(0) = 0, y'(0) = 1, y''(0) = 3$.
8. Solve Cauchy -Euler equation $x^2y'' - 3xy' + 4y = 2x^2$.
9. $x^2\frac{d^2y}{dx^2} - x\frac{dy}{dx} + 2y = 3logx$.
10. $x^2y'' - 3xy' + 4y = 0\,, y(1) = 1, y'(1) = 0;$

Q:2 Evaluate the following:

1. $L\{e^{-3t}(cost + sin2t)\}$
2. $L\{te^{-3t}sin\pi t\}$
3. $L\{u(t-3)cosh3t\}$
4. $L\{\frac{e^{-2t}sin3t}{t}\}$
5. $L\{t^{3/2} + sin10t + e^{-3t}\}$
6. $L^{-1}\left\{\frac{se^{-3s}}{s^2+25}\right\}$
7. $L^{-1}\left\{\frac{2s^2}{(s+1)(s-2)(s-3)}\right\}$
8. $L^{-1}\left\{\frac{se^{-3s}}{s^2+25}\right\}$
9. $L^{-1}\left(log\frac{s+2}{s+3}\right)$
10. $L^{-1}\left(\frac{2s+3}{s^2+2s+5}\right)$

Q:3 Solve the following IVP using Laplace transform:

1. $\frac{d^2y}{dt^2} - 6\frac{dy}{dt} + 9y = t^2e^{3t}, y(0) = 2, y'(0) = 6.$