BRAC UNIVERSITY

Inspiring Excellence

Department of Mathematics and Natural Sciences
MAT120 : Integral Calculus and Differential Equations
Assignment-4

Name:

Section: **ID:**

Use this page as the cover page of your Assignment. **Total 10 $\times$ 10 = 100.**

Solve the following Ordinary Differential Equations (ODE) using appropriate methods.

1. $(x+1)\frac{dy}{dx}+(x+2)y=2xe^{-x}$.
2. $y\,\frac{dx}{dy}-x=2y^2,\ \ y(1)=5.$
3. $(x+1)\,\frac{dy}{dx}+y=\ln x,\ \ y(1)=10.$
4. $(4y+2t-5)dt+(6y+4t-1)dy=0,\ \ y(-1)=2.$
5. $(\frac{3y^2-t^2}{y^5})\,\frac{dy}{dt}+\frac{t}{2y^4}=0,\ \ y(1)=1.$
6. $(y^2\cos x-3x^2y-2x)dx+(2y\sin x-x^3+\ln y)dy=0,\ \ y(0)=e.$
7. $(\frac{1}{1+y^2}+\cos x-2xy)\,\frac{dy}{dx}=y(y+\sin x),\ \ y(0)=1.$
8. $y'''+12y''+36y'=0,,\ \ y(0)=0,\ \ y'(0)=1,\ \ y''(0)=-7.$
9. $y''+3y=-48x^2e^{3x}.$
10. $y''-2y'+5y=e^x\cos 2x.$