Department of **Mathematics and Natural Science**

MAT120- Integral Calculus & Differential Equations

Total marks: 10

Assignment-02

Name:

Sec:

ID:

1. **(1 Points)** Solve the Separable Variable Method
   $sinx(1 + siny)dx + cosy(1 - cosx)dy = 0$
2. **(1 Points)** Solve the Exact Differential equation
   $(e^x siny + e^{-y})dx + (e^x cosy - xe^{-y})dy = 0$
3. **(1 Points)** Find the Integrating Factor and solve
   $\left(y + \frac{1}{3}y^3 + \frac{1}{2}x^2\right)dx + \frac{1}{4}(x + xy^2)dy = 0$
4. **(1 Points)** Find the Linear First Order ODE
   $(1 + y^2)dx = (\tan^{-1} y - x)dy$
5. **(1 Points)** Solve the Homogeneous DE
   $y'''' + 2y'' - 2y = 0$
6. **(1 Points)** Solve the Homogeneous DE
   $y'''' + y''' + y'' = 0$
7. **(1 Points)** Solve the Homogeneous DE
   $16y'''' + 24y'' + 9y = 0$
8. **(1 Points)** Solve the Separable Variable Method
   $2xyy' = 1 + y^2, y(2) = 3$
9. **(1 Points)** Solve the Non-Homogeneous DE
   y''-y' + y = 2 sin3x
10. **(1 Points)** Solve the Exact Differential equation
    $(e^{2y}$- y cosxy$)dx + (2xe^{2y} -$ x cosxy + 2y$)dy = 0$