



Mid Term Examination, Spring 2023

Department of Electrical and Electronic Engineering (EEE)

Level- 2, Term-I

Course Code: MATH 211

Course Title: Differential Equation and Laplace Transforms

Credit Hour: 03

Notes:

Time: 1 hr.
Full Marks: 60

- a. Figure on the right of each question indicate marks for respective question.
 b. Answer any Two (02) of the following Three (03) questions.

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| 1. | a. | Explain the definition of order and degree of differential equation with each example. | 04 |
| | b. | Find the differential equation of all circles passing through the origin and whose center are on the x -axis. | 13 |
| | c. | Explain the first order and first degree differential equations by the method of variable separation, $\frac{dy}{dx} = e^{x+y} + x^2 e^{x^3+y}$. | 13 |
| 2. | a. | Discuss the solution of the differential equation $(3x^2 + 6xy^2)dx + (6x^2y^2 + 4y^3)dy = 0$ by using the integrating factor. | 15 |
| | b. | Estimate the linear differential equation with constant coefficient $(D^2 - 2D + 1)y = x^2 e^x$. | 15 |
| 3. | a. | Explain the first order and first degree differential equations by the method of Homogeneous, $x^2 y dx - x^3 dy = y^3 dy$. | 15 |
| | b. | Solve the first order and first degree Linear Differential Equation of $(1 - x^2)\frac{dy}{dx} - xy = 1$. | 15 |