



Daffodil International University
Department of Electrical and Electronic Engineering
Faculty of Engineering
Mid Term Examination Spring- 2025

Course Code: EEE :0541-211

Section: A,B,C,D,E

Full Marks: 25

Course Title: Coordinate Geometry and Vector Analysis

Level-Term: L1-T1

Exam Date:19/3/2025

Teacher's Initial: IJM

Time: 1.5 Hours

[Notes: Answer all the following questions
CO's represent one of the learning outcome of the
course Figures on the right hand side indicate marks
allocated for the questions]

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| <p>Q1. (a) Explain general equation of second degree and identify the nature of the equation $x^2 + 2xy + y^2 + 2x - 1 = 0$.</p> | <p>CO-1
(C2)</p> | <p>[3]</p> |
| <p>Q2. (a) Discuss the diagram of 3-D coordinates systems.</p> | <p>CO-1
(C2)</p> | <p>[2]
[2]</p> |
| <p>(b) Identify the cylindrical coordinates $(5, \frac{4\pi}{3}, -4)$ to rectangular coordinates.</p> | | |
| <p>Q3. (a) Generalise the equation of the plane through the point $(2, -1, -4)$ and perpendicular to the plane $3x + 4y - 5z + 6 = 0$ and $x - 2y + 2z + 1 = 0$.</p> | <p>CO-1
(C2)</p> | <p>[3]</p> |
| <p>(b) Identify the constant <u>k</u> so that the planes $x - 2y + kz = 0$ and $2x + 5y - z = 0$ are at right angles ;find in that case the plane through the point $(1, -1, -1)$ and perpendicular to both the given planes</p> | | <p>[4]</p> |
| <p>Q4. Estimate the standard form of the following equation
$32x^2 + 52xy - 72y^2 - 64x - 52y - 148 = 0$</p> | <p>CO-1
(C2)</p> | <p>[7]</p> |
| <p>Q5. A quadratic equation $3x^2 + 7xy - 15y^2 = 0$.</p> | <p>CO-1
(C2)</p> | <p>[4]</p> |
| <p>(a) Interpret the lines represented by the equation.</p> | | |
| <p>(b) Identify the angle between the lines $3x^2 + 7xy - 5y^2 = 0$.</p> | | |