



Daffodil International University
Department of Electrical and Electronic Engineering
Faculty of Engineering
Final Examination, Fall – 2024

Course Code: 0541-211
Section: A ,B ,C,D,E,F
Full Marks: 40

Course Title: Coordinate Geometry and vector analysis
Level-Term: L1-T1
Exam Date: December 19, 2024

Teacher's Initial: IJM
Time: 2 Hours

[Notes: Answer all the Questions]

- Q1. (a) Interview about cross product of two vectors.** CO-3 [02]
(C3)
- (b) Applying cross product , **Recognize** a unit vector perpendicular to the plane of $A=2i-6j-3k$ and $B=4i+3j-k$. CO-3 [03]
(C3)
- Q2. (a) Select** the direction in which directional derivative is maximum from the point $(2,-1,3)$ and **show** the directional derivative of $\psi(x, y, z) = x^2 + y^2 + xz$ at the point $(2, -1, 3)$ in the direction of $A = i + 2j + k$. CO-3 [05]
(C3)
- (b) **Evaluate** the constant a so that the following vector is a solenoidal $V=(3x-2y+3z)i+(-2x-3y+5z)j+(4x+3y+az)k$. CO-3 [03]
(C3)
- Q3. (a) Identify** the equation of the plane passing through the intersection of the planes $x + 2y + 3z + 4 = 0$ and $4x + 3y + 2z = 1$ through the point $(1, 2, 3)$. CO-2 [06]
(C2)
- (b) **Identify** the equation of the plane which is parallel to the plane $4x-4y+7z-3=0$ and distance of 4 units from the points $(3, 1, -2)$. CO-2 [06]
(C2)
- Q4. Plane** is drawn through the line of intersection of the planes $x+2y+2z=1$, $x+y-z+1=0$ and is at distance of unit from the point $(4,-2, 1)$. **Demonstrate** that there are two such planes and find their equations. CO-2 [07]
(C2)
- Q5. (a) Compute** the value of the constants α, β and γ so that $V = (-4x - 3y + az)i + (\beta x + 3y + 5z)j + (4x + \gamma y + 3z)k$ is irrotational. CO-3 [04]
(C3)
- (b) Suppose $A = i - 2j - 3k$, $B = 2i + j - k$, $C = i + 3j - 2k$. **Calculate** the volume of the parallelepiped whose sides are denoted by the three vectors A, B and C . [04]