G.B. PANT INSTITUTE OF ENGINEERING & TECHNOLOGY, PAURI GARHWAL
B.TECH (IV Sem), ECE
ELECTROMAGNETIC FIELD THEORY (TEC-244)
CLASS TEST-I

Time: 1 Hour **M.M:15**

Note: Attempt all questions:

Q 1. Express the uniform vector field $F = 5a_x$ in (a) cylindrical component; (b) spherical component. [2]

Q 2. Given the two points, $C(-3, 2, 1)$ and $D(r = 5, \theta = 20^o, \varphi = 70^o)$, find: (a) the spherical coordinates of C; (b) the rectangular coordinates of D; (c) the distance from C to D. [3]

Q 3. Define Coulombs law and Electric field Intensity. [2]

Q 4. Three infinite uniform sheets of charge are located in free space as follows: $3\ nC/m^2$ at $z = -4$, $6\ nC/m^2$ at $z = 1$, and $-8\ nC/m^2$ at $z = 4$. Find **E** at the point: (a) $P_A(2, 5, -5)$; (b) $P_B(4, 2, -3)$; (c) $P_C(-1, -5, 2)$. [3]

Q 5. Define and write significance of Maxwell's first equation for electrostatics field. [2]

Q 6. Given the electric field flux density, $D = 0.3r^2 a_r$ nC/m^2 in free space, find Electric field E at point $P(r = 2, \theta = 25^o, \varphi = 90^o)$ [3]