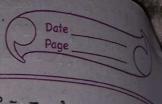
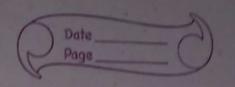
NAME : Himonshu Dixit RATCH : B10 ENROLL NO .: 21103262 Physics - 2 (15B11PH211) Tutorial-1 Q_{01} $f(x,y,z) = x^2 + y^3 + z^4$ (2,-3,4) $\nabla f = \left(\frac{id}{dx} + \frac{id}{jd} + \frac{id}{kd}\right) f = 2\pi i + 3\frac{2}{3} + 42\frac{3}{k}$ 0f = 41 +23 j = 256 k dy $9000 A = y^2 \hat{i} + (2\pi y + z^2) \hat{j} + 2yz \hat{k}$ divergence (A) = 9 $\frac{div(A)}{\partial x} = \frac{d^2y^2}{\partial x} + \frac{\partial(2xy+z^2)}{\partial x} + \frac{\partial(2yz)}{\partial z}$ = 2n + 2ydiv(A) = 2+4 = 6 Ap $\vec{A} = yz\hat{i} + \lambda z\hat{j} + \lambda y\hat{k}$ Cure $(\overline{A}) = \overline{\forall} \times \overline{A} = \begin{vmatrix} \hat{i} & \hat{k} \\ \frac{1}{2} & \hat{k} \end{vmatrix} = \hat{i}(x-x) - \hat{j}(y-y) + \hat{k}$ = 0 4/ $0.4 \quad 0 = 4x^2 + 3y^2 - 9z^2$ $\vec{\epsilon} = -\nabla \phi = -\left(8x^{2} + 6y^{2} - 18z^{2}\right)$ = - (241+241-90k) Ay



Q.s. OCXCI, OSYCI, OSZCI P= 30x3. $Q = \iint_{\partial x} dx dy dz$ = $30 \int \int x^2 y^2 dx dy = 30 \int x^2 y^2 dx$ = $15 \left[x^2 dx = \frac{15}{3} x^3 \right]_0^1 = 50$ 9 = \[\int \langle \l $= 30 \int \frac{\chi^3}{3} dy = 10 \int y dy$ = -5C Pay Q.60° P(x≤a) = P. x $Q = \int \int dz = \int_{-\infty}^{\infty} \int_{-\infty}^$ = The 3 The 03 Ay 0.7. Q, = 30nc, Q, = 150nc, D3 = -70nc Ø = Pnet-lend. = 130 nC = 110 x 10 - 9 C = 1.243×104 Nm2/c2 0.8. lines entor = 5000 lines leave = 3000 Done = no. of lines passing normally through the



0.9

$$\vec{3} = 100\hat{k}$$
, $\vec{\epsilon} = 8\hat{i} + 4\hat{j} + \hat{k}$

$$\phi = \vec{e} \cdot \vec{s} = (8\hat{i} + 4\hat{j} + \hat{k}). 100 \hat{k}$$

\$ = 0 When charge is outside the body : 9 = 0