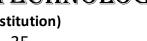


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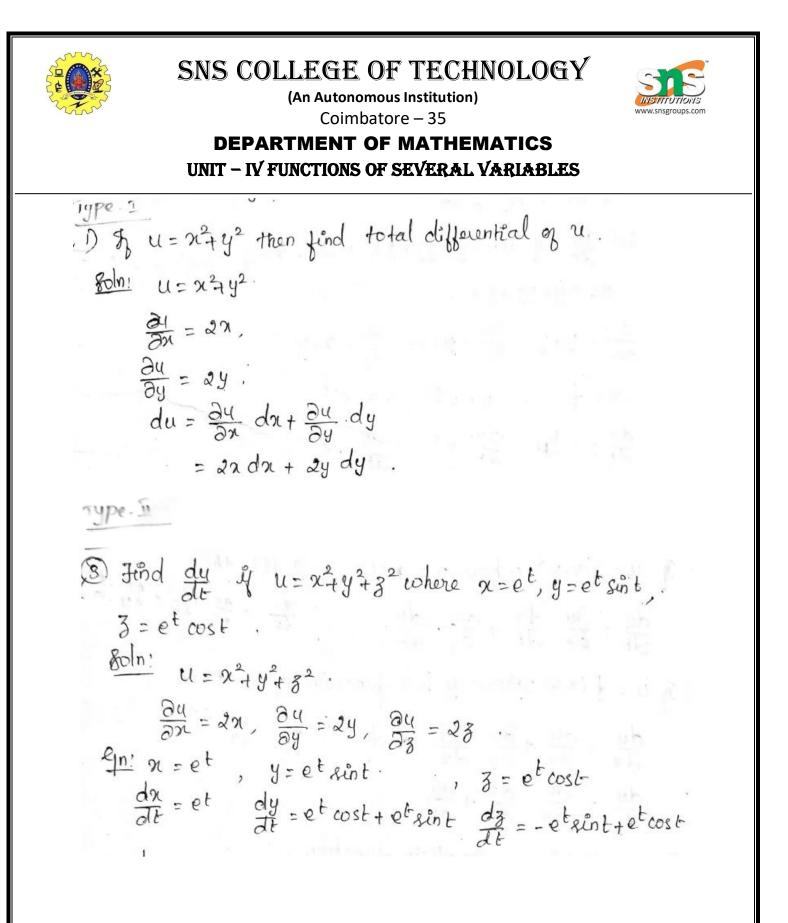




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## **DEPARTMENT OF MATHEMATICS** UNIT – IV FUNCTIONS OF SEVERAL VARIABLES

TOTAL DERIVATIVE 1) & u=z(a,y) then total differential of u is du = du dn + du dy. 2)  $f_{1}$  u = f(x, y) where  $x = g_{1}(t)$ ,  $y = g_{2}(t)$  then QU = 20 . 21 + 0 . . . . du = du dx + du dy 3) & u = f (x, y) where y & a function of n then  $\frac{du}{dx} = \frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} \cdot \frac{\partial y}{\partial y} \quad and \qquad \frac{\partial u}{\partial y} \cdot \frac{\partial u}{\partial y} \cdot \frac{\partial u}{\partial y}$  $\frac{du}{du} = \frac{\partial u}{\partial x} \cdot \frac{dx}{dy} + \frac{\partial u}{\partial y}$ Defferentiation of Implicit Junction: If f(x,y)=c where c may be zero of non-zero is an implicit function of x & y then in a lot reflected (chi left, and  $\frac{dy}{dn} = -\frac{\partial h}{\partial x}$ Dy 14 July 2014 10 10



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## DEPARTMENT OF MATHEMATICS UNIT - IV FUNCTIONS OF SEVERAL VARIABLES

de = du du + du dy dy dy dz = 22. et+ 24. (etcost+etsint)+23. (etcost-etsint) = 2 et et + 2 et sint (et cost, et sint) + 2 et cost (et cost et sint) = 2e<sup>2t</sup> + 2e<sup>2t</sup> sint cost + 2e<sup>2t</sup> sin<sup>2</sup>t + 2e<sup>2t</sup> cost - 2e<sup>2t</sup> cost sint = 2e2t 2e2t = 4e2t 1 24 23+ ys = Barry find dy abln: 213+ 43- 3axy=0 Let 2(21, y) = 23+ y3- 3axy  $\frac{\partial b}{\partial x} = 3x^2 - 3ay$  $\frac{\partial f}{\partial y} = 3y^2 - 3an$  $\frac{dy}{dn} = -\frac{\left(\frac{\partial f}{\partial h}\right)}{\left(\frac{\partial f}{\partial h}\right)} = -\frac{3\left(n^2 - \alpha y\right)}{3\left(y^2 - \alpha x\right)} = \frac{\alpha y - x^2}{y^2 - \alpha x}$ 

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