



Chandigarh Group of Colleges

Chandigarh Engineering College, Landran, Mohali -140307

B-Tech-Computer Science & Engineering

Subject: MATHEMATICS-III(BTAM-304-18)

Assignment No: 1

Total Marks:-10

Note: All questions are compulsory;

Q1: Transform the equation $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 0$ into polar coordinates.	(2)	CO1
Q2: In a plane triangle ABC, <u>find the</u> maximum value of $\cos A \cos B \cos C$.	(2)	CO1
Q3: If $u = \frac{a^3}{x^2} + \frac{b^3}{y^2} + \frac{c^3}{z^2}$ where $x + y + z = 1$. Prove that the stationary values of u are given by $\underline{x = \frac{a}{a+b+c} \text{ or } \frac{a}{\sum a}}$, $\underline{y = \frac{b}{a+b+c} \text{ or } \frac{b}{\sum a}}$ and $\underline{z = \frac{c}{a+b+c} \text{ or } \frac{c}{\sum a}}$	(2)	CO1
Q4: Find the point on the surface of $z = x^2 + y^2 + 10$ nearest to the plane $x + 2y - z = 0$.	(2)	CO1
Q5: If $\phi(x, y, z) = 0$. Show that $\left(\frac{\partial y}{\partial z} \right)_x \left(\frac{\partial z}{\partial x} \right)_y \left(\frac{\partial x}{\partial y} \right)_z = -1$	(2)	CO1