



SNS COLLEGE OF ENGINEERING  
Kurumbapalayam (Po), Coimbatore – 641 107



AN AUTONOMOUS INSTITUTION

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A' Grade  
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

### Topic: 3.12 – TUTORIAL 9

1. A rectangular box open at the top, is to have the capacity of 108 cu.ms. Find the dimensions of the box, requiring the least materials for its construction.
2. Find the dimensions of the rectangular box, open at the top, of maximum capacity whose surface area is 432 square meters.
3. The temperature  $u(x, y, z)$  at any point in space is  $u = 400xyz^2$ . Find the highest temperature on surface of the sphere  $x^2 + y^2 + z^2 = 1$
4. Find the volume of the greatest rectangular parallelepiped inscribed in the ellipsoid

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1.$$