R09

Code No: C2003

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I - Semester Examinations, March/April-2011
THEORY AND ANALYSIS OF PLATES
(STRUCTURAL ENGINEERING)

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks
- - -

1. A thin long narrow rectangle plate of thickness "h", flexural rigidity "D" is subjected to a u.d.l. of intensity "w". If it is a fixed along the longer edge, obtain the general expression for the deflection & B.M. Also find their maximum values. [12]

2. By establishing equilibrium of an elemental area in a circular plate derive the differential equation of equilibrium for bending of thin circular plate hence obtained defection of a circular plate with a hole at centre bending under moments M1 and M2 uniformly distributed along their inner and outer boundaries. [12]

3. A rectangular plate a, x, b, simply supported at the edges is subjected to a sinusoidal loading. Using the Navier's solution, obtain the general expressions for deflection & B.M. Also find their maximum value. [12]

4. For a simply supported rectangular plate subjected to a hydrostatic pressure on the entire span, obtain deflections and moments n the plate using LEVY's solution. [12]

5. Find out the maximum deflection for a fixed rectangular plate of size a x b subjected to a uniform load of intensity “w” using Ritz method. [12]

6. Write down the governing differential equations for solving the plate bulking problem for a simply supported rectangular plate. Obtain the expressions for critical stress in case of one direction bulking. [12]

7. Obtain Ritz solution based on strain energy formulation for the deflection behavior of thin plates. [12]

8. Formulate the problems of building behavior of plates resting on elastic foundation and hence analyze the behavior of mat four later. [12]

******