

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SECOND SEMESTER M.TECH. DEGREE EXAMINATION, APRIL 2018
CIVIL ENGINEERING
10CE6114: THEORY OF PLATES AND SHELLS

Max Marks : 60

Duration: 3 Hours

Part A (Modules I - II)

(Answer any two questions: 2 × 9 = 18 Marks)

- 1 Prove that slightly bent plate under pure bending, the direction of maximum slope and zero slope are at right angles to each other. (9)

2. Derive the Levy's solution for simply supported and uniformly loaded rectangular plate. (9)

3. Describe Navier's solution for simply supported rectangular plates. (9)

Part B (Modules III - IV)

(Answer any two questions: 2 × 9 = 18 Marks)

4. Obtain the expression for deflection and bending moments of a simply supported annular plate with edge moments (9)

5. Obtain the solution of uniformly loaded simply supported rectangular orthotropic Plates (9)

6. Explain classical plate theory. (9)

Part C (Modules V & VI)

(Answer any two questions: 2 x 12 = 24 Marks)

7. a) Describe membrane theory of shells. (5)
b) Derive the expression for membrane forces in cylindrical shells. (7)
8. Obtain the membrane forces in a conical tank to a depth 'd' with liquid of specific gravity ' γ ' when the force is maximum. (12)
9. A shell of revolution of is subjected to symmetrical load. Considering membrane theory, determine the equations of equilibrium. (12)