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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SECOND SEMESTER M.TECH DEGREE EXAMINATION, MAY 2016

Civil Engineering

(Structural Engineering)

01CE6112 Theory and Design of Plates and Shells

Max. Marks: 60 Duration: 3 Hours

Part A
(Any Two Questions)

1. (a) How are plates classified? (4)
   (b) Prove that twists are complimentary in nature (5)
2. Explain Navier solution for simply supported rectangular plates. (9)
3. (a) Derive the relation between bending moments and curvature in the case of pure bending. (5)
   (b) What are the assumptions made in the thin cylinder theory? (4)

Part B
(Any Two Questions)

4. Derive the equation for deflection in the case of cylindrical bending of a uniformly loaded circular plate with simply supported edges. (9)
5. (a) Explain the conditions applied to an annular plate with moments and shears along the boundaries. (5)
   (b) What are the assumptions made in classical plate theory for layered plates. (4)
6. Explain the design aspects of reinforced concrete folded plates. (9)

Part C
(Any Two Questions)

7. Differentiate between membrane and bending theories of shells. (12)

8. (a) Write notes on classification of shells. (6)

   (b) Explain the significance of edge beams. How are these beams reinforced? (6)

9. Discuss the design aspects of cylindrical shells. (12)