

Reg. No. :

--	--	--	--	--	--	--	--	--	--

**Question Paper Code: 92061**

M.E. DEGREE EXAMINATION, APRIL - 2015.

Elective

Structural Engineering

01PSE511 - THEORY OF PLATES

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. What are the assumptions made in bending of anisotropic plates?
2. What is meant by laterally loaded thin plates?
3. Define Navier's solution method.
4. What are the types of load acting on plates?
5. What are the conditions for Levi's method?
6. What is the relationship between cartesian and polar coordinates in a circular plate?
7. State the finite element technique used in plate structure?
8. Define plate theory.
9. What are membrane plates?
10. What is meant by orthotropic plates?

PART - B (5 x 14 = 70 Marks)

11. (a) Derive the cylindrical bending of uniformly loaded rectangular plate with simply supported edges. (14)

Or

- (b) Derive the moment curvature relationship in the case of pure bending of plates. (14)

12. (a) Find out Levy's solution for simply supported rectangular plate subjected to uniformly distributed load. (14)

Or

- (b) Derive an expression for the deflection under a sinusoidal loading on rectangular plate with edges simply supported with span 'a' & 'b' using Navier approach. (14)

13. (a) Derive the governing equation for an elliptical plate with built in edges. (14)

Or

- (b) Explain symmetrical bending plates. (14)

14. (a) Determine the maximum deflection for a fixed rectangular plate is subjected to a uniform load of intensity 'q' using Ritz method. (14)

Or

- (b) Write brief notes on energy method. (14)

15. (a) Explain details about grids in plates. (14)

Or

- (b) Derive the differential equation for the bending of anisotropic plates. (14)

PART - C (1 x 10 = 10 Marks)

16. (a) Give a brief account of classification of plates. (10)

Or

- (b) Explain in detail about thick plates. (10)