

Code No: H8704/R13

M. Tech. II Semester Regular/ Supplementary Examinations, July-2016

THEORY OF PLATES AND SHELLS

(Common to SE and SD)

Time: 3 Hours

Max. Marks: 60

*Answer any FIVE Questions
All Questions Carry Equal Marks*

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| 1. | a | Derive the expression for differential equation of cylindrical bending of plates. | 8 |
| | b | What are the merits and demerits of plates? | 4 |
| 2. | | Describe Navier solution for simply supported rectangular plates. | 12 |
| 3. | | Obtain the expression for deflection in case of uniformly loaded circular plates with clamped edges. | 12 |
| 4. | | Discuss the general guidelines followed for selecting the dimensions of the various structural components of a shell. | 12 |
| 5. | | Briefly describe the structural behavior of thin shell. | 12 |
| 6. | | Explain the general theory of cylindrical shell loaded symmetrically with respect to its axis. | 12 |
| 7. | | Design a cylindrical shell roof considering beam and arch action to cover a parking place 40 meters wide and 160 meters long. Superimposed load due to waterproofing cover and occasional live loads may be taken as 350 kg/m ² of the surface of the shell. Slope at the ends may be taken as 40°. Thickness of the shell may be taken as 110mm. Dimensions of the edge beam may be assumed as 300mm by 1500 mm. Shell may be divided into four parts for arch action. Use M20 and Fe250 steel. Show the design details clearly. | 12 |
| 8. | | Explain design procedure of elliptic paraboloid by membrane theory. | 12 |
