Seat No: _____ **Enrollment No: _____**

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

M.Tech.Winter 2018- 19 Examination

Semester: 2 **Date: 13/12/2018**
Subject Code: 03209155 **Time: 02:00pm to 04:30pm**
Subject Name: Theory of Plates and Shells **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 A) Define plate. Write the assumptions made in thin plate with small deflection theory. **(05)**

B) Briefly explain classification of shells. **(05)**

C) Derive the expression for strains in plate in terms of displacement 'w'. **(05)**

Q.2 **Answer the following questions**. (Attempt any three) (Each five mark) **(15)**

A) List out the advantages and disadvantages of shells and briefly comment on shell structures.

B) State the difference between

i. Navier's solution and Levy's solution

ii. Beam and plate

C) Comment on membrane theory for cylindrical shells.

D) Write short notes on:

i. Thick plate and thin plate

ii. Boundary conditions for thin rectangular plates.

Q.3 A) Derive Lagrange equation of plates. **(07)**

B) Using membrane theory derive the equilibrium equations for shells of revolutions. **(08)**

OR

B) Derive the force displacement equations for cylindrical shells. **(08)**

Q.4 A) Derive the moment curvature relationships in case of pure bending of rectangular plate. **(07)**

OR

A) Derive the equations of equilibrium for doubly curved shell of revolution using membrane theory. **(07)**

B) Analyse simply supported rectangular plate subjected to uniformly distributed load using Navier's solution. **(08)**