R16

Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
M.Tech I Year II Semester (R16) Regular Examinations May/June 2017
THEORY AND DESIGN OF PLATES AND SHELLS
(Structural Engineering)
(For Students admitted in 2016 only)

Time: **3 hours**   Max. Marks: **60**

(Answer all Five Units **5 X 12 =60** Marks)

UNIT – I

1   Derive the expression for maximum deflection of a simply supported rectangular plate subjected to point load using Navier's method.   12M

OR

2   Derive the differential equation for deflection of cylindrical bending of uniformly loaded rectangular plates with simply supported edges.   12M

UNIT – II

3   Derive the equation for deflection at the centre of a simply supported rectangular plate subjected to Hydrostatic pressure.   12M

OR

4   Derive the general differential equation of an elastic curve for symmetrical bending of laterally loaded circular plates.   12M

UNIT – III

5   Explain about various types of shells with neat sketches.   12M

OR

6   A Reinforced concrete circular shell has the following particulars.   Radius $(R) = 6m$, Span $(2L) = 24m$, Semi-central angle $(\phi) = 60^0$ Thickness $(t) = 50mm$.
Calculate the maximum stress due to self weight only in the shell by beam theory and membrane theory?   12M

UNIT – IV

7   a.   Explain the geometry of Hypar shell with a neat Sketch.   5M
    b.   Explain how the stresses in spherical shells can be calculated due to its own weight and snow load.   7M

OR

8   a.   Define conoid and explain the geometry of a conoid.   8M
    b.   Distinguish between cynclastic and anticlastic shells.   4M

UNIT – V

9   a.   Briefly explain the structural behaviour of folded plates.   6M
    b.   Sketch the different types of folded plates.   6M

OR

10   Explain step by step procedure for analysis of folded plates by simpson's method.   12M

END