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43 (7) STR-VII 7.5

**2015**

**STRUCTURE VII**

Paper : ENG-7.5

Full Marks : 100

Time : Three hours

***The figures in the margin indicate full marks for the questions.***

**PART-A**

Answer **any five** questions.  $5 \times 10 = 50$

1. What do you mean by Pre-stressed concrete member? List down the assumptions in the design of Pre-stressed concrete members.
2. Why is it necessary to use high strength concrete and high tensile steel wires in pre-stressed concrete member?

*Contd.*

3. Explain with stress diagram pre-stress due to tendons placed at eccentricity for a beam with rectangular section.
4. Differentiate between Pre-tensioning and Post-tensioning.
5. Write a note on Dome shaped structure with diagrams and examples.
6. A pre-stressed concrete beam  $400\text{mm} \times 600\text{mm}$  in section has a span of  $6\text{m}$  and is subjected to a UDI of  $16\text{ kN/m}$  including self weight of the beam. The pre-stressing tendons which are located along the longitudinal centroidal axis provide an effective pre-stressing force of  $960\text{ kN}$ . Determine the extreme fibre stress in concrete at the mid-span section.

### PART-B

Answer *any five* questions.  $5 \times 10 = 50$

1. Draw the structural details of a doubly reinforced beam. Assume any data required.

2. Draw the structural details of a two-way slab. Assume any data required.
3. Draw the structural details of a square footing. Assume any data required.
4. Draw the structural details of a round/circular column. Assume any data required.
5. Write short notes on :
  - (i) Shell structure
  - (ii) Folded plate structure
6. Write short notes on :
  - (i) Pneumatic structure
  - (ii) Space frame structure.