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Total Number of Pages:02

B.TECH
PCC14301

5th Semester Regular / Back Examination 2015-16
DESIGN OF CONCRETE STRUCTURES

BRANCH: Civil Engineering

Time: 3 Hours

Max marks: 70

Q.CODE: T160

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

- Q1 Answer the following questions: (2 x 10)
- a) Balanced section
 - b) Load factor
 - c) Limit state of collapse
 - d) Lap length
 - e) Effective length
 - f) Yield strength
 - g) Percentage elongation
 - h) Tensile strength of concrete in design
 - i) Yield line
 - j) Two way slab
- Q2 a) What is a singly reinforced beam ? (3)
b) Design a rectangular beam section for flexure only to resist a moment of 60 KNm using M25 grade concrete and Fe415 grade steel. (7)
- Q3 Design a rectangular beam for an effective span of 6.0 m. The super imposed load is 100 KN/m and size of the beam is limited to 300 mm x 750 mm. (10)
- Q4 An 8 m long beam is simply supported at 1.5 m from either end and carries a live load 40 KN/m inclusive of its dead load. Design the beam and show a sketch of reinforcement. (10)
- Q5 a) Differentiate between short and long columns. (3)
b) Design a rectangular column of 3.0 m long to carry a load of 1500 KN. The column is fixed at the base and free at the top. Show the reinforcement details. (7)
- Q6 Design a square footing to carry a column load of 1200 KN from a 400 mm square column. The safe bearing capacity of the soil is 100 KN/m². Show a neat sketch for the footing section. (10)

- Q7 Design a two way simply supported slab on all four edges for a room of 5m x 3m to carry a working load of 3KN/m^2 . The corners are held own. Show the section of slab in one direction. (10)
- Q8 Design a staircase of 1.5 m width for a total rise of 4.0m in two flights. Show the reinforcement for one flight with the landing. (10)