Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐☐   Total No. of Pages : 02

Total No. of Questions: 09

B.Tech.(CE) (2011 Onwards) (Sem.–4)
# DESIGN OF CONCRETE STRUCTURE-I
Subject Code : BTCE-403
Paper ID : [A1173]

Time: 3 Hrs.   Max. Marks: 60

INSTRUCTION TO CANDIDATES:
1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**
4. **Assume any data suitably. For all designs Limit State Method is to be used.**

SECTION-A

Q.1   Write briefly :

1. Why shrinkage in concrete occurs?

2. Draw the flow chart for various concreting operations.

3. Why flyash concrete is not commonly used?

4. Explain creep of concrete.

5. Why bleeding of concrete occurs?

6. What is Cellular Concrete?

7. Distinguish between plain and prestressed concrete.

8. List the various types of cements.

9. Explain Air entrained concrete.

10. What is Ferro-fibrocrete?

SECTION-B

Q.2 How will you prepare light weight concrete to suit different situations?

Q.3 A rectangular R.C.C beam 300 mm wide and 450 mm deep (overall) is R/F with 4 bars of 20 mm dia on tension side. The beam X-section is subjected to max. B.M. of 30 kN-m, S.F. of 30 kN and a torsional moment of 36 kN-m. Design the longitudinal and transverse R/F.

Q.4 Explain Reinforcement splicing. Also explain curtailment of R/F.

Q.5 Explain the importance of anchorage of reinforcing bars in flexure and shear.

Q.6 Design the interior panel of a flat slab 5.6×6.6 m in size, for a super-imposed load of 7.75 kN/m^2. Provide 2-way reinforcement. Use M 20 concrete and Fe 415 steel.

SECTION-C

Q.7 Determine the proportions of the materials required for making the concrete from the data.

Compressive strength required at 28 days = 277 kg/cm^2

Max. Size of coarse aggregates = 40 mm

Fineness modulus of coarse aggregates = 6.9

Fineness modulus of fine aggregates = 2.1

Weights of fine and coarse aggregates are 1750 kg/cm^3 and 1070 kg/m^3 respectively. Voids in fine and coarse aggregates are 38% each.

Q.8 What are the quality control tests carried on concrete ingradients?

Q.9 Explain why Limit state design is considered more rational than Working stress design.