B.E. Fourth Semester (Civil Engineering) (Old) (CGS)

Reinforced Cement Concrete - I : 4 CE 05

P. Pages : 2 | AU - 3113

Time : Three Hours | Max. Marks : 80

* 0 7 8 1 *

Notes : 1. Answer **three** question from Section A and **three** question from Section B.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answer necessary with the help of neat sketches.
5. I.S. 456-2000 (Revised) may be consulted.
6. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION – A

1. a) Describe the following types of cement. **9**
i) Blast Furnance slag cement.
ii) Pozzolanic Portland cement.
iii) Low Heat cement.

b) Define initial and final setting time of cement and explain its significance. **5**

OR

2. a) State and explain the properties of fresh concrete **7**

b) What is fineness modulus of aggregate? Explain the procedure for determining fineness modulus of fine aggregate. **7**

3. a) State and explain properties of hardened concrete. **7**

b) Define. **6**
i) Compressive strength.
ii) Creep.
iii) Grade of concrete.

OR

4. a) Define admixtures and explain any two types of admixtures. **7**

b) What are the factors affecting strength of concrete. **6**

5. a) State different types of special concrete. Explain any two in detail. **6**

b) Explain the difference between Guniting and shotcreting concrete with their field application. **7**

OR

6. a) Explain. **6**
i) Light weight concrete.
ii) Self compacted concrete.

b) State use of fibre reinforced concrete and roller compacted concrete. 7

SECTION – B

7. a) State the factors governing mix design. 4

b) Explain the steps involved in IS code method of concrete mix design. 10

OR

8. a) What do you mean by mix design. Explain in brief. 4

b) Explain the steps involved in IRC-44 method of concrete mix design. 10

9. a) What are the assumptions made in basic elastic theory of R.C. beam. 4

b) A singly reinforced beam has rectangular c/s 250 x 450 mm. It is reinforced with 4-12 mm ϕ Fe 415 steel with a clear cover of 25 mm. The beam is subjected to maximum bending moment of 80 kNm. Determine the maximum stresses induced in steel and concrete if the grade of concrete is M_{20}. 9

OR

10. a) Define. 4
   i) Over reinforced section.
   ii) Balance section.

b) Design a simply supported roof slab for a room size 8 x 3.5m clear with super imposed load of 4 kN/m^2. Use M_{20} mix and Fe 415 grade steel. 9

11. Design a doubly reinforced R.C. beam for effective span of 6m. The beam is required to carry total load of 25 kN/m including self weight. The size of beam is to be restricted to 230x450 mm. Use M_{20} grade of concrete and Fe 415 steel. 13

OR

12. Design shear reinforcement using 10mm diameter two legged stirrups for beam having following data. 13
   i) Eff. size of beam = 230 x 600 mm
   ii) Eff. span = 6.50 m.
   iii) UDL on beam including self weight = 40 kN/m.
   iv) Tensile reinforcement = 4-25 mm ϕ.

   Use M_{20} grade of concrete and Fe 415 steel.

****