**2371**

**B.E. 6th Semester (Civil. Engg.) Examination,**

**May–2013**

**DESIGN OF CONCRETE STRUCTURES–II**

**Paper–CE–302 E**

*Time allowed : 3 hours ]* *[ Maximum marks : 100*

***Note :*** *(i) Attempt any five questions.*

*(ii) Use of IS code 456-2000 and 3370-1976 (Vol I to Vol IV) are permitted.*

*(iii) Draw neat sketches wherever required.*

*(iv) Assume suitable data if missing or required.*

*(v) All questions carry equal marks.*

**1.** (a) Write short notes on (a) Modification of Moments (b) Basic assumptions for design of continuous Beams. 5+5

(b) How will you calculate the shear force and Bending moment and Torsional moment at a pt. P at an angle $\phi$ from one support of curved Beam ? 10

**2.** Design a flat slab $4^m \times 4^m$ Panel of a warehouse $24^m \times 32^m$ size ; carrying a load of 800 kg/m$^2$. The columns are $6^m$ apart centre to centre. Use M20 grade concrete and I e 415 grade steel. 20

or

Design a semicircular beam supported on 3 equally spaced columns. The centre of columns are on a circular curve of diameter 8 m. The superimposed load on beam per meter is 2000 kg. Use M20 concrete and Fe 415 grade steel. 20

3. Design a combined footing for two columns each 400 mm × 400 mm, 4 m apart ; each carrying 1600 kN Load. Available width restriction is 2 m. The safe Bearing capacity of soil is 200 kN/m². Use limit state method. 20

4. (a) Enumerate the design considerations of an elevated water tank as per IS 456-2000, IS-3370-1976 (I to IV).

(b) What joints would you recommend for water retaining structures ? 12+8=20

5. Design a silo with hopper bottom to store wheat for a capacity of 20 MT, Angle of repose of cool is 30°. The stored wheat is to be surcharged at an angle of repose of 30°. The weight of wheat is 800 kg/m³. Assume suitable stresses as per IS code for M20 and Fe 415. 20

6. (a) State the assumptions made in prestressed concrete design.

(b) Define upper and lower kern points.

(c) Describe Freyssinet System of Prestressing with sketches. 7+6+7=20

7. Write short notes on :

(a) Method of analysis of building frames.

(b) Testing of beam and column sections

(c) Analysis of stresses in a corner column.

(d) Substitute frames. 4×5=20

8. (a) Define yield line theory.

(b) How many methods are there to analyze the slab as per yield line theory ?

(c) How will you analyze two way rectangular slab continuous on all four edges by any one method of analysis ? 4+6+10=20