

Q.P. Code : 25813

[Time: 04 Hours]

[Marks: 80]

Please check whether you have got the right question paper.

- N.B:
1. Question.No.1 is compulsory.
 2. Attempt any three questions from the remaining questions.
 3. Assume any suitable data if required.
 4. Figures to the right indicate full marks.

- Q.1 a)** What is yield line list the characteristics features of yield lines. **04**
- b)** Explain different types of flat slab with sketch **06**
- c)** Explain Jansen's theory of lateral pressure on bin Walls and derive the expression for lat. pre on bin wall using this theory. **10**
- Q.2 a)** A simply supported circular slab of radius 2.8m is reinforced with 8 mm bars at 150mm centre to centre in two mutually perpendicular directions. Average effective depth is 100mm and overall depth is 125mm. Determine how much service load it can carry. Use M20/Fe415 floor finish load 1KN/m². **10**
- b)** Derive the expression relating yield line moment and ultimate load intensity Wu for simply supported equilateral triangular slab (isotropically reinforced) **10**
- Q.3** Design and interior panel of flat slab with panel size 6m x 6m supported by columns of size 500mm x 500mm. provide suitable drop take live load as 4KN/m². Use M25/Fe415. **20**
- Q.4** A hall of 8m x 20m is proposed to be covered with reinforced concrete slab supported on rectangular portal frames at 4m c/c. clear height of hall required is 4m from the finished floor level. The structure is one storeyed design the intermediate portal frame by using limit state method for dead load and live load. Assume live load 3kN/m² use M20/Fe415. Draw neat sketches showing details of reinforcement in the portal frame. **20**
- Q.5** Design a strip footing for a row of 4 Columns of size 300mm square. Centre to centre distance between the adjacent column is 5m. The two exterior column carry a load of 1500kN each and two interior columns carry a load of 2000kN. Size of soil is 300kN/m². Use M20/Fe415. **20**
- Q.6 a)** Design a corbel to carry an ultimate load of 400 kN at a distance of 200mm from the face of column of size 400mm x 400mm. draw the reinforcement details. Use M20/Fe415 **10**
- b)** Explain Airy's theory for design of silos. **10**