Total No. of Questions : 8]

SEAT No. :

P5066

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[5060]-544

M.E. (Civil - Structures)

Advanced Design of Concrete Structures

(2013 Credit Course) (Semester - II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions from the following.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figure to the right indicates full marks.***
4) ***Assume suitable data, if necessary and clearly state.***
5) ***Use of cell phone is prohibited in the examination hall.***
6) ***Use of electronic pocket calculator IS:456 are allowed.***

Q1) a) Explain assumptions in yield line theory. **[5]**

b) Draw yield line for the Rectangular slab with fixed at supports on three sides with shorter side simply supported. **[5]**

Q2) Design the slab, 3.5m × 4.5m, to carry superimposed service load of 3kN/m². Slab is to be orthotropically reinforced. Use M20 concrete and Fe 415 steel. **[10]**

Q3) Design a grid slab for a floor of hall 11.5m × 13.5m c/c having square grid of 1.5m. Use M25 and Fe 500. Take FF=1.2kN/m² and live load 5.5kN/m². Draw reinforcement details. **[10]**

Q4) Design an interior panel of flat slab 5.75m × 5.75m for a live load of 5.5kN/m² and F.F. 1.1kN/m². Use M20 and Fe415 steel. Size of column is 520mm × 520mm. **[10]**

Q5) Design circumferential and radial reinforcement in the slab of elevated water tank if capacity of water tank is 1000m³. Diameter of tank as 15m. Assume total circumferential load on periphery as 2100 kN (including wall load and roof slab) **[10]**

P.T.O.

Q6) Design a square bunker to store 60kN of coal. The unit weight and angle of repose may be taken as 8kN/m³ and 27° respectively. **[10]**

Q7) The foundation of a structure is to consists of 16 piles to carry a total load of 10400kN. The piles are 300mm × 300mm and are 9m long. They are spaced at 1.5m c/c. Design one of the pile. Use M20 and Fe415. **[10]**

Q8) Design the formwork for column 275mm × 275mm having a height of 2.8m. It is proposed to deposit concrete in one stage. **[10]**