Total No. of Questions : 8]

SEAT No. :

P4019

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[5255]-516

M.E. (Civil - Structure Engg.)

ADVANCED DESIGN OF CONCRETE STRUCTURES

(2013 Pattern) (Semester - II) (501409)

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

Instructions to the candidates:

1) ***Attempt any five questions from the following.***
2) ***Draw neat diagrams.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data if necessary.***
5) ***Use of cell phone is prohibited.***
6) ***Use of electronics pocket calculator, IS 456 is allowed.***

Q1) a) Draw yield lines for the following **[6]**

i) Rectangular slab with all four edges fixed

ii) Rectangular slab with two adjacent edges fixed and two edges free

b) Explain guidelines for establishing axes of rotations and yield lines. **[4]**

Q2) A rectangular slab 5.5m×5.5m is simply supported at the ends. Design the slab to carry superimposed load of 4.75kN/m^2, if the slab is to be orthogonally reinforced. Use M20 and Fe 500. Use yield line theory. **[10]**

Q3) Design a circumferential and radial reinforcement in the base slab of elevated water tank for 1.15 lakh liters with diameter of water tank 14m using M25, Fe 500. Circumferential load on periphery is 1800kN, SBC is 220kN/m^2. **[10]**

Q4) Design an interior panel of flat slab 5m×6m for a live load of 4.25kN/m^2 and FF 1.25kN/m^2. Use M20 and Fe 415. **[10]**

Q5) Design a grid slab for a floor of hall 10m×14m having square grid of 1.75m. Use M25 and Fe 500. **[10]**

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Q6) Design a square bunker to store 155 tonnes of cement for the following. Density of cement is 31.5kN/m^2. Angle of repose is 30º. Use M20 Fe 500. Draw details of reinforcement. **[10]**

Q7) Design raft foundation for the following **[10]**

Center to center distance of column in both directions is 2.75m, column size 350×350mm, working axial load on each column is 800kN. The depth of the strata is 2.2m. Use M25 and Fe 500. SBC 140kN/m^2. Draw reinforcement details.

Q8) Design a bell type RCC shear wall for a length of 3.6m and thickness 230mm. Axial forces are 1750kN and 275kN due to dead and live load and seismic load respectively. Use M25 and Fe500. Draw reinforcement details. **[10]**

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