Register Number:……..

KUMARAGURU
college of technology
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B.E DEGREE EXAMINATIONS: NOV/DEC 2022

(Regulation 2018)

Seventh Semester

CIVIL ENGINEERING

U18CEE0003: Design of Reinforced Concrete Structures

Use of IS: 456, 1343, 3370 and IRC codes are allowed

COURSE OUTCOMES

CO1: design counter fort and cantilever retaining walls.
CO2: design underground and overhead R.C water tanks
CO3: analyze and design various types of slabs using yield line theory.
CO4: design bridges as per IRC standards.
CO5: design flat slab as per IS standards.
CO6: apply the concepts of pre-stressing for structural elements analysis

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	Mention different types of retaining wall.	CO1	[K_1]
2.	What are design requirements for retaining wall?	CO1	[K_1]
3.	Arrive the size of a circular tank for 4 lakh liter capacity.	CO2	[K_3]
4.	How to design tank walls if L/B<2 and L/B>2 where Land B are size of the tank?	CO2	[K_2]
5.	What are the assumptions in Yield line theory?	CO3	[K_1]
6.	Draw yield line pattern for any four slabs.	CO3	[K_2]
7.	Define abutment and approach.	CO4	[K_1]
8.	What are the disadvantages of flat slabs?	CO5	[K_1]
9.	Recall the term electrical prestressing.	CO6	[K_1]
10.	Define pretension with neat sketch.	CO6	[K_1]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	Design a cantilever retaining wall for a height of 4.0 m above GL. It has level earth fill with angle of repose 30^0, density of earth fill 16kN/m^3 , co-eff of friction =0.7.Use M20 and Fe415 steel. Safe bearing capacity of the soil is 125 kN/m^2. Assume necessary data	CO1	[K_4]

if required.

12.	Design a flexible base circular water tank for a capacity of 3.5 lakh liters. Use M30 and Fe415 steel. Assume necessary data if required.	CO2	[K_4]
13.	Derive the ultimate moment capacity for a simply supported orthotropically reinforced rectangular slab.	CO3	[K_3]
14.	Explain different types of bridges with neat sketch.	CO4	[K_2]
15.	Illustrate different types of flat slab as per IS456, also write the advantages and explain how to arrive the size of various components?	CO5	[K_3]
16.	Analyze the mid span stress for a rectangular beam 100 x 200 mm carrying a live load of 1.5 kN/m over a span of 7m. Ii is prestressed with 6 wires of 6 mm diameter wire located at 40 mm from the centroidal axis. The stress in the teel is 1000 N/mm^{2}.	CO6	[K_4]

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