

FACULTY OF ENGINEERING

B.E. 3/4 (Civil) II-Semester (New)(Main)Examination, May 2013

Subject : Structural Engineering Design and Detailing - I (RCC)

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions of Part - A and answer all questions from Part-B.**PART – A (25 Marks)**

1. When the combined footing to be designed? Explain. (2)
2. Mention the use of shear key in Retaining wall. (2)
3. Write the expression for active earth pressure. (2)
4. Write the expression for minimum depth of foundation. (2)
5. Differentiate between flexible joint and rigid joint in the water tank. (2)
6. What is effective width method? (3)
7. How the class -AA tracked AA loading differs from class A loading? (3)
8. What is Impact factor? What are the factors to be considered in the calculation of Impact factor? (3)
9. Write the stability requirements for retaining wall. (3)
10. Draw the active earth pressure distribution in the Retaining wall with sloped back fill. (3)

PART – B (50 Marks)

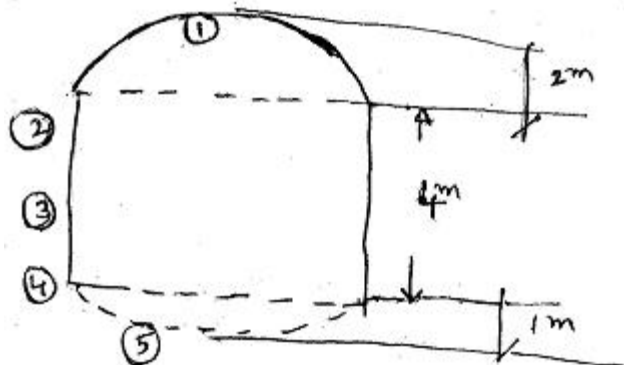
11. A cantilever retaining wall is to retain an Eastern embankment 4m above ground level. Its foundation is 1.2m below the ground level. SBC of soil is 200 kN/m^2 . Unit weight of Earth is 18 kN/m^3 angle of repose is 30° , check the stability and design of the stem, $\mu = 0.55$. Sketch the reinforcement details. (15)

OR

12. Design a combined footing connecting two column of same size and load carrying capacity 1000 kN separated by 3m . If SBC of soil = 150 kw/m^2 use M20 and Fe 415 grade of material. Sketch the reinforcement details. (15)
13. Design a rectangular tank $5\text{m} \times 4\text{m}$ to retain water to a height of 3m (including FB 0.2m). The tank was placed on ground. Use M20, Fe415 grade of material. Sketch the reinforcement details. (15)

OR

14. Design the following components of a intz tank whose line diagram is given below: (15)



- (a) Top dome
- (b) Ring beam
- (c) Cylindrical wall use M20 and Fe415 grade of material. Sketch the reinforcement details.

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15. Design a RC deck slab bridge to suit the following data : (20)

Width of carrying way = 7.5m

Width of clear span = 5.0m

Width of kerb = 600mm

Width of bearing = 400 mm

Use M20 and Fe415 grade of material.

OR

16.(a) Explain the calculation of design moment of bridge decks by using Pigeaud's curve.

(b) A two way slab pannel of a T-beam bridge for the following data:

Pannel dimension = 3m x 3.5m

Live load = 1 RC class AA tracked

Average thickness of wearing coat = 80mm

thickness of slab = 200mm

(20)
