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Code No.: 32012 AS

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (Civil Engg.) III Year II-Semester Advanced Supplementary Examinations, June/July-2017

Reinforced Concrete Design-II

Time: 3 hours

Max. Marks: 70

- Note: i) Answer ALL questions in Part-A and Part-B
ii) Missing data, if any may, suitably be assumed
iii) Use of IS 456, code for water tanks and bridges are permitted.

Part-A (10 × 2 = 20 Marks)

1. State the condition in which trapezoidal footing is preferred.
2. List the situation in which counterfort retaining wall is used.
3. Explain different earth pressure conditions on retaining walls.
4. Discuss why elastic design is used for R.C. water tanks.
5. List the forces in the design of top dome of Intz tank.
6. State the necessity of bracings in overhead water tanks.
7. Explain effective width method for design of bridges.
8. Differentiate between class AA (wheeled) and class A loadings.
9. List two codes for the design of bridges.
10. State the loads to be considered in the design of staging.

Part-B (50 Marks)

11. Design a combined footing supporting two columns of an industrial building having column size of 450 × 450 mm subjected to an axial load of 1200 kN each with a spacing of 4 m centre to centre. The SBC of soil shall be taken as 250 kN/m². The concrete and steel grades are M 25 and Fe 415. Sketch neat diagram of combined footing along with reinforcement details. [15]

(or)

12. Design a cantilever type retaining wall to retain an earth embankment of 5.2 m above the ground level. The density of the earth is 17 kN/m³, angle of internal friction is 30°, Coefficient of friction between soil and concrete is 0.4, and the materials used are M 20 and Fe 415. The safe bearing capacity of soil is 250 kN/m². Sketch neat diagram of retaining wall along with reinforcement details. [15]

13. Design a circular tank resting on ground with a rigid base for a capacity of 2.5 lakh litres. Free board may be assumed as 0.2m. Adopt M-25 and Fe-415. Sketch the reinforcement details. [15]

(or)

14. A reinforced concrete intz type water tank supported on six columns is required to store 225000 litres of water. Design the top dome and side wall of water tank. The concrete and steel are of grades of M 20 and Fe 415. [15]

15. Design a solid slab bridge for a clear span of 8 meters. Width of carriage way is 7.5 meters, size of kerb is 600mm × 225mm and width of supports is 600 mm. The IRC class-A (wheeled) vehicle loading shall be considered for analysis and design. The materials are M 20 grade concrete and Fe 415 grade steel. Sketch a neat diagram of slab along with reinforcement details. [20]

(or)

16. Design the reinforced concrete slab of an RC T-beam bridge for IRC class A-A tracked vehicle type loading using the following data. Spacing of the main T-beam is 3 meters, cross girders is 4 m and span of the T-beam is 14 meters. Materials to be used are M30 and Fe 415 grade steel. Sketch a neat diagram of slab along with reinforcement details. [20]