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Roll No .....

CE-702 (GS)

B.E. VII Semester

Examination, December 2017

Grading System (GS)

Advanced Structural Design - II (RCC)

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions. All questions carry equal marks.
ii) Use of IS code and design aids is permitted.
iii) Assume missing data suitably.

1. a) Explain substitute frames and loading conditions for maximum moment values of different critical points of building frame.
   b) A bar bell type shear wall with central part 4200mm×180mm and two 450mm×450mm strong bands at each end is supported on a footing 8m×4m. Which rests on soil whose modulus is 30000kN/m³. Determine the lateral stiffness of the wall. Height of the wall is 30m.

2. Design the stem of a cantilever retaining wall to retain level backfill of 4.8 m high, with the following data: Unit weight of back fill = 18 kN/m³; Angle of internal friction = 30°, Depth of foundation = 1.2 m; Thickness of base slab = 600 mm. Use M-20 concrete and Fe415 grade steel.

3. Design the upright slab of a counterfort retaining wall to retain earth 8 m high above base level. The back fill is horizontal and unit weight of backfill is 18 kN/m³. Take angle of interval friction = 30° spacing of Back counterforts = 3.6 m c/c. Thickness of base slab = 400 mm . Use M-20 concrete and Fe415 grade steel

4. Design the roof dome, top ring beam and cylindrical wall of an intze tank having diameter=12m. Height of cylindrical wall=8m, Rise of top dome=1.8m.

5. Design a circular tank with flexible base for capacity of 600 KL. The depth of tank is 6.0 m including a free board of 0.20 m.

6. Design the bunker to be used for storing coal with following:
   a) Capacity of bunker = 500 kN
   b) Unit weight of coal = 8 kN/m³
   c) Size of bunker in plan = 4.0 m × 4.0 m
   d) Bottom opening = 0.5 m × 0.5 m

7. Design a solid slab bridge for the following data:
   a) Clear span = 6.5 m, Clear width of Roadway = 7.6 m Thickness of weaving coat = 75 mm, Bearing on support = 400 mm
   b) IRC class AA tracked vehicle, Use M-25 grade concrete and Fe415 grade steel.

8. Write short notes on any four of the following:
   a) Functions and types of shear wall
   b) Losses in prestressed concrete
   c) Braced and unbraced building
   d) Merits and demerits of prestressed concrete
   e) Airy's theory

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