Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

CE-7001-CBGS

B.E. VII Semester

Examination, June 2020

Choice Based Grading System (CBGS)

Advance Structural Design -I (RCC)

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.
iii) Assume suitable data.

1. a) What is shear wall? Explain the function of shear walls. 7
   b) A portal frame with ends hinged is to be analysed and design for the following data: 7
      i) Height of Columns - 4.5m
      ii) Spacing of Portal frames = 4.2m
      iii) Distance between column centres - 10m
      iv) Live load on the roof = 2.5kN/m^2
      v) SBC of soil is 150kN/m^2.
      R.C.C. slab is provided over the portal frames. Sketch the reinforcement details.

2. Design the counter fort retaining wall to the following particulars: 14
   i) Height of wall above Ground Level = 7m
   ii) S.B.C. of soil = 16kN/m^2
   iii) Angle of repose = 26^o
   iv) Unit weight of fill = 16kN/m^3
   v) Spacing of counterforts = 3.5m
   vi) Use M-25 grade concrete and Fe-415 grade steel.

3. Design a circular tank with fixed base for capacity of 450KL. The Depth of tank is 4.5m, including a freeboard of 0.20m. The tank is free at the top and rests on the ground. 14

4. a) Using Janssen's theory, derive the expression for finding horizontal and vertical pressure exerted by stored material of height '*h*' in a silo. 7
   b) A silo with internal diameter 6.0m, height of cylindrical portion 18m and central opening with 0.5m is to be built to store wheat. Design the cylindrical wall. 7

5. a) Explain the losses in prestressing in detail. 7
   b) Calculate the design moment along long and short span of dock slab. For a T-beam bridge on a national highway considering class AA tracked vehicle only. The following data is given - 7
   Effective span of beam = 15m
   Carriage way width = 8m
   c/c spacing of crossbeams = 4.2m
   c/c spacing of longitudinal beams = 2.6m
   Thickness of wearing coat = 85mm
   Thickness of slab = 200mm
   Width of rib of T-beam = 350mm.

6. a) Explain Sway and Non Sway Building. 7
   b) Explain different type of Earth Retaining Structures. 7

7. a) Define Bunker and discuss the primary design process for Bunker. 7
   b) Explain different type Tanks. 7

8. a) Explain with sketches Hoyer's long line system of pretensioning. 7
   b) List the different loads considered for the Design of Bridge. 7

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