

SL-280

Total No. of Pages :2

Seat No.	
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B.E. (Civil Engineering) (Semester - VIII)

Examination, May- 2017

STRUCTURAL DESIGN OF FOUNDATION AND RETAINING STRUCTURES (Elective - II)

Sub. Code: 67753

Day and Date : Wednesday, 03- 05 - 2017

Total Marks : 100

Time :2.00 p.m. to 5.00 p.m.

- Instructions :**
- 1) Solve any two questions.
 - 2) Figures to the right indicate full marks.
 - 3) Use of IS 456 -2000 is allowed.
 - 4) Assume suitable data if necessary and mention it clearly.
 - 5) Use of non-programmable calculator is allowed.

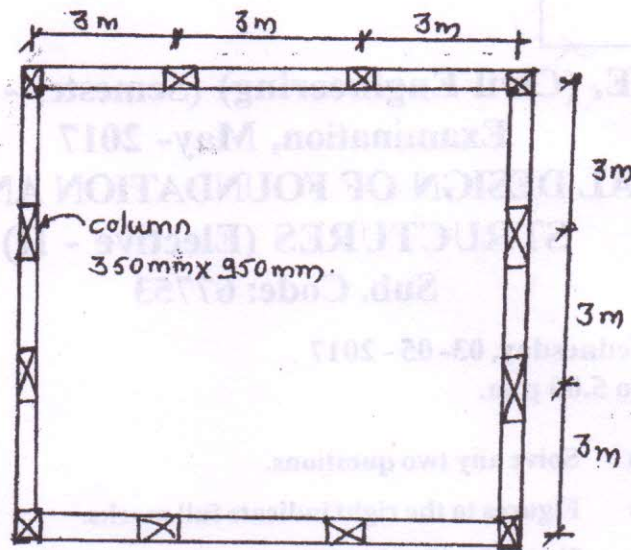
SECTION-I

Q1) Design a reinforced concrete combined rectangular footing for two columns A and B located 4.00m apart. The overall sizes of the column A is 360 mm × 360 mm and column B is 420 mm × 420 mm and the loads on them are 1000 kN and 1400 kN respectively. The boundary line of the property is 400 mm from the outer face of column A. The bearing capacity of soil obtained from plate load test is 200 kN/m². Use M 20 concrete and Fe 415 steel. [25]

Q2) A column 450 mm × 450 mm in section stands on a pile cap supported on three piles of 400 mm diameter each. The column is situated at the centroid of the pile group. The total load transferred to the column is 600kN. The piles are 1.40m centre to centre. Design the pile cap. Use M20 and Fe 415 steel. [25]

Q3) Design a raft foundation supporting 12 columns of a building as fig. 1 shows the position of the columns. The load on each column is 400 kN. Use M 20 grade concrete and Fe 415 steel. The safe bearing capacity of soil is 120 kN/m². [25]

P.T.O.



SECTION-II

- Q4) a)** What are the various precautions taken for rectification of tilts and shifts of well foundation. [13]
- b) Write in detail about different shapes of well foundation commonly used also write their applications? [12]
- Q5)** A cantilever retaining wall retains earth embankment of 5m above ground level. Unit weight of soil is 18.5 kN/m^3 . The Angle of repose is 30° . the embankment is horizontal at top of retaining wall. Design a stem, heel and toe slab of a cantilever retaining wall. Take soil bearing capacity 120 kN/m^2 . The coefficient of friction between soil and concrete is 0.55. Use grade of concrete M_{20} and grade of steel Fe 415. Draw neat sketch showing reinforcement details of retaining wall. [25]
- Q6) a)** Explain with neat sketch rubble mound break water. Also write advantages of rubble mound break water over other types of break waters. [12]
- b) Design armor of rubble mound break water if depth of water is 15.0m and wind velocity is 150 Km/hour . The fetch of wave is observed to be 250 Km . Allowable bearing pressure on rock is 800 kN/m^2 . [13]

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