BE - Civil - Sem - VIII CBSGS

Q.P.Code: 37773

(4 Hours) [Total Marks: 80]

20 NOV 2018

1. Question **No 1** is **Compulsory.**
2. Attempt any **three** questions out of remaining questions.
3. Use of **IS CODES** is **permitted.**
4. **Assume** suitable data if required and **state** it clearly.
5. Sketches must be drawn on **DRAWING SHEET.**

Q 1 Attempt following questions.

a. State the advantages of ductility in reinforced concrete structures. **05**

b. Write a short note on different types of joints in water tanks. **05**

c. Explain the scissor joint in staircase reinforcement. (figure1) **04**

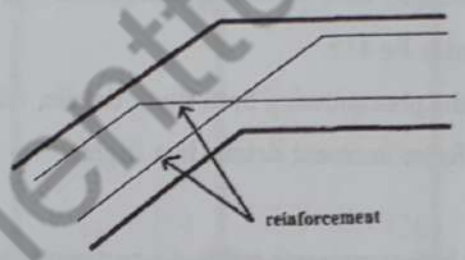

Figure 1.

d. Explain the structural behavior of cantilever and counter fort retaining wall with neat sketches. **06**

Q 2 The framing plan of a residential building is shown in Figure 2. All external walls are 230 mm thick and internal walls are 150 mm thick. Floor to floor height is 3.5 m. Grade of concrete is M 20 and steel is Fe 415. All columns are 300mm ×300mm in size.

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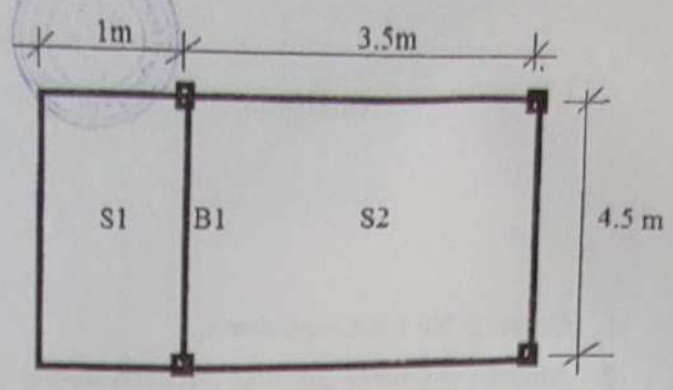

Figure 2

	Design the cantilever slab (chajja) S1	08
	Draw the reinforcement details of S1	02
	Design beam B1	08
	Draw the reinforcement details of beam B1	02
Q 3	Design a dog legged staircase having 11 risers in a flight. Take rise 150mm and tread 260 mm. Width of staircase is 1.2 m. Grade of concrete is M 20 and steel is Fe 415.	14
	Draw the plan showing both flight details, mid landing etc.	02
	Draw Reinforcement details in a flight.	04
Q 4	Design by approximate method a rectangular tank 6 m × 4 m in plan and 3.5 in height. Tank is resting on firm ground. Grade of concrete is M 25 and steel is Fe 415.check the design for safe stresses.	
	Design the following a) Side walls b) Base slab	14
	Draw neat sketches showing the reinforcement details	06
Q 5	A reinforced concrete cantilever retaining wall is supporting a backfill of height 3.5 m above ground. Take density of soil = 18 kN/m^3. Angle of	

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repose $=30^0$. SBC of soil = 175 kN/m^3 and coefficient of friction between concrete and soil =0.35. Grade of concrete is M 20 and steel is Fe 415.

a) Design the stem and toe of wall and show all stability checks. 14

b) Draw reinforcement details of toe and stem with curtailment of reinforcements. 06

Q 6 a) Following figure shows the layout plan of the columns of a building. Design a raft foundation for the building. Working loads acting on columns are given below. Take net bearing capacity = 80 kN/m^3. 15

Load on columns C1,C3,C7,C9 = 700 kN.

Load on columns C4,C6 = 900 kN.

Load on columns C2 ,C8 =800 kN.

Load on column C5= 1200 kN.

Draw a neat sketch showing reinforcement details 05

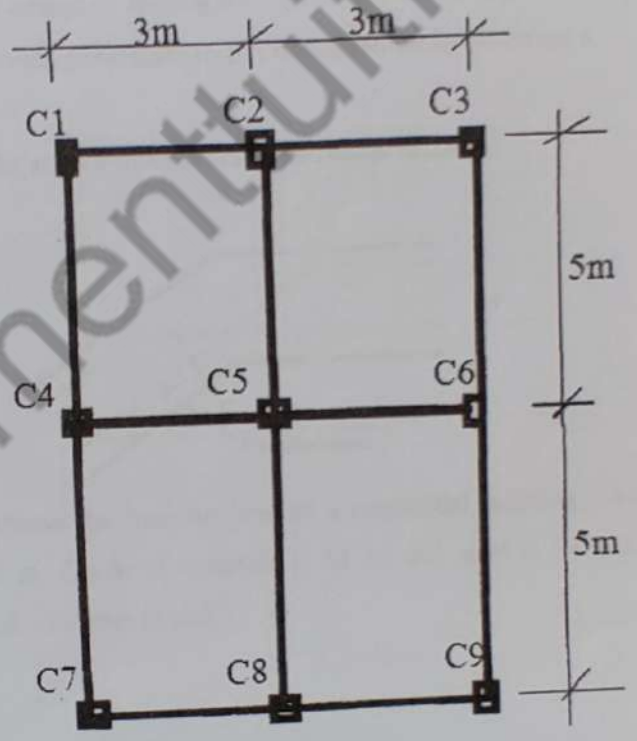

Figure 3

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