C. U. SHAH UNIVERSITY
Winter Examination-2022

Subject Name : Structural Design-II

Subject Code : 4TE08STD1　　　　　　　　**Branch: B.Tech (Civil)**

Semester: 8　　　**Date: 20/09/2022**　　　**Time: 02:30 To 05:30**　　　**Marks: 70**

Instructions:
- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

Q-1　　　Attempt the following questions:　　　　　　　　　　　　　(14)
- a) Define Characteristic Load
- b) What is Clear Cover?
- c) What is Slenderness ratio?
- d) Define pitch distance
- e) What is crippling load?
- f) What is shear leg effect?
- g) Define Edge Distance
- h) What is End distance ?
- i) What is poison's ratio?
- j) What do you mean by Fe 500
- k) What would be the flexural strength of M20 concrete as per IS code?
- l) What is the unit wt to be considered for RC
- m) What is the equation for design wind velocity?
- n) Explain Ductility.

Attempt any four questions from Q-2 to Q-8

Q-2		Attempt all questions	(14)
	A	Explain the basic wind speed and designed wind speed as per IS code.	07
	B	Discuss limit state method of design for RC structure	07
Q-3		Attempt all questions	(14)
	A	Discuss how wind pressure is calculated on cylindrical structure as per relevant IS code.	07
	B	Discuss working stress method of design for RC structure	07
Q-4		Attempt all questions	(14)
	A	The floor slab system of a multistoried building is shown in figure 1. Calculate design moments for slab S1,S2 and S3. Consider LL as 4 kN/m^2 and FF as 1 kN/m^2.Width of Beam is 300 mm.	07

		Use M20 Concrete and Fe 415 Steel.	
	B	The floor slab system of a multistoried building is shown in figure 1. Design for slab S1 based on the moment calculation as per Que-4 A	07

Q-5		Attempt all questions	(14)
	A	Enlist and explain various elements of Circular overhead tank	07
	B	Enlist and explain different components of retaining wall.	07

Q-6		Attempt all questions	(14)
	A	A cantilever retaining wall is to retain the earth of height 5.5 m above lower GL. Fix the basic dimensions of retaining wall. Take SBC as 175 kPa, $\mu= 0.5$, $\phi= 30^0$, Unit wt of soil=18kN/m^3, Use M20 Concrete and Fe 415 Steel.	07
	B	Explain different elements of Plate girder.	07

Q-7		Attempt all questions	(14)
	A	Discuss steps involved in the design of Gantry girder.	07
	B	Determine the moments and forces due to the vertical and horizontal force acting on a simply supported gantry girder as per following data. Simply supported span = 6m. Crane's wheel centre = 3.6 m. Self wt of girder = 1.6 kN/m Max crane static wheel load = 220 kN. Wt of Crab/trolley = 60 kN. Max hook load = 200 kN.	07

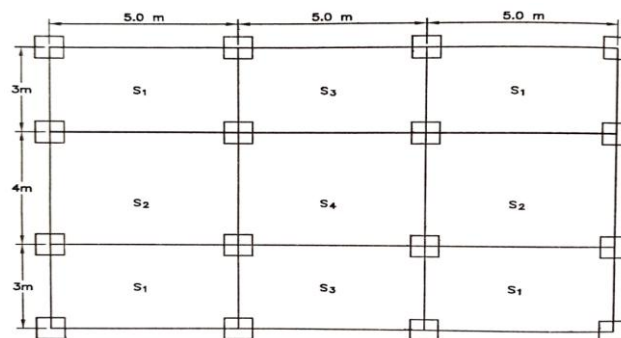| Q-8		Attempt all questions	(14)
	A	List out the items that are to be considered while planning and designing an industrial building	07
	B	State and explain in brief the loads acting on chimney	07

Figure 1