VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD

Accredited by NAAC with A++ Grade

B.E.(Civil Engg.) VIII-Semester Main & Backlog Examinations, May-2023

Advanced Reinforced Concrete Design (PE-V)

Time: **3 hours**

Max. Marks: **60**

Note:
1. Answer all question from **PART-A** and **THREE** questions from **PART-B**
2. Use of IS:456-2000, and Design charts of SP-16 is permitted

Part-A (10 × 2=20 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	List a few practical situations where do you come across for beams curved in plan.	2	2	1	1
2.	Mention various forces to be considered in the design of a curved beam.	2	1	1	1
3.	Write any two points that differentiate deep beams from normal beams.	2	2	2	1
4.	Under what circumstances side face reinforcement is provided?	2	1	2	1
5.	Differentiate between kinematic and static indeterminacy.	2	2	3	1
6.	What is substitute frame? Explain.	2	2	3	1
7.	State the assumptions made in the analysis of portal frames?	2	1	3	1
8.	Write the criterion to be satisfied for the check for two way shear in flat slabs.	2	2	4	1
9.	List out under what situations, pile foundations are adopted.	2	2	5	1
10.	Give design specifications of raft foundation.	2	2	5	1

Part-B (40 Marks)

11.	A reinforced concrete deep girder is continuous over spans of 8 m apart, from center to center. It is 4.5 m deep, 300 mm thick and the supports on columns 800 mm in width. If the girder supports a UDL of 250 kN/m including its self-weight, design the necessary reinforcement. Use M25 concrete and Fe 415 grade steel.	13	3	2	3

OR

12.	A circular girder of a water tank has a mean diameter of 12m supported on 8 symmetrically spaced columns along the circumference. Load acting on the girder is 250kN/m. Design the critical sections of the girder. Consider M25 concrete and Fe 500 steel.	13	4	1	3

		M	L	CO	PO
13.	Explain the procedure for the analysis of building frames using substitute frame.	13	3	3	2
	OR				
14.	Design a portal frame fixed at base to suit the following data:	13	4	3	3
	Spacing of portal frames 4m center to center				
	Height of columns =4 m				
	Distance between column centres 8m				
	Live load on roof =2kN/m^2. RCC slab continuous over portal frames. Design portal frame columns (vertical elements only) by using M25 concrete and Fe 415 grade steel. Sketch the reinforcement details.				
15.	Design an interior panel of a flat slab carrying a super imposed load of 5kN/m^2. The weight of the floor finish on the slab is taken as 2.5 kN/m^2. The panel is supported on 600 mm diameter circular columns. Size of panel is 7m X 7 m. Use M 20 grade concrete and Fe 415 grade steel.	14	4	4	3
	OR				
16.	Design a raft foundation for 8 columns, arranged in two rows, spaced at 5 metres c/c in the longitudinal direction and 4.5 metres in the transverse direction. The internal columns carry 1450 kN each and end columns carry 1550 kN.The bearing capacity of the soil is 120 kN/m^{2}Use M 20 grade concrete and Fe 415 grade steel.	14	4	5	3

M : Marks;   L: Bloom's Taxonomy Level;   CO; Course Outcome;   PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	6%
ii)	Blooms Taxonomy Level – 2	14%
iii)	Blooms Taxonomy Level – 3 & 4	80%

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