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Code No. : 18121

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD*Accredited by NAAC with A++ Grade***B.E. (Civil Engg.) VIII-Semester Main & Backlog Examinations, June-2022****Advanced Reinforced Concrete Design (PE-V)**

Time: 3 hours

Max. Marks: 60

*Note: i. Answer all questions from Part-A and any THREE from Part-B**ii. 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	Write the design principles of the curved beam.	2	1	1	1
2	Mention any two applications of the curved beam.	2	1	1	1
3	State the classification of deep beam as per L/D ratio.	2	1	1	2
4	Sketch a typical portal frame.	2	1	2	2
5	Draw the hinge at the base of the column for portal frame.	2	1	2	2
6	Write the design criteria for the RCC portal frame.	2	1	2	1
7	Differentiate the flat slab from the ordinary slab in RCC.	2	1	3	1
8	Sketch the flat slab cross section with column head.	2	1	3	2
9	What is the relation between the design live load to design self-load in direct design method of flat slab?	2	1	3	2
10	Write the significance of the friction piles in foundation.	2	1	3	2
Part-B (13+13+14 = 40 Marks)					
11	Design a semi-circular RC beam supported on 3 columns equally spaced and supporting a uniformly distributed load of 30kN/m. the radius of the centre line of the beam is 5m. Adopt M20 grade of concrete and Fe-415 grade of steel. (or)	13	3	1	3
12	A single span deep beam has over all depth of 4m and effective span of 6m. The width of the beam is 400mm. The beam supports a uniformly distributed live load of 300kN/m, over the entire span. Using M20 grade of concrete and Fe-415 grade of steel, design suitable reinforcement for the beam and sketch the details.	13	2	1	4

Contd... 2

100

200
300

13	<p>Design the portal frame hinged at the base to suit the following data: Spacing of portal frame = 4m, Height of the column = 4m, Distance between column Centre = 10m, Live load on the roof is 1.5kN/m² RCC slab continuous over portal frame, SBC of soil is 200kN/m² Adopt M20 grade of concrete and Fe-415 grade of steel.</p> <p>(or)</p>	13	3	2	3
14	<p>The roof of 8m wide hall is supported on portal frames spaced at 4m intervals, the height of the portal frame is 4m. The continuous slab is 120mm thick. Live load on roof is 1.5kN/m², SBC of soil is 150kN/m². The column is connected with a plinth beam and base of the column is assumed as fixed. Design the column and beam. Adopt M20 grade of concrete and Fe-415 grade of steel.</p>	13	2	2	4
15	<p>Design the exterior panel of a flat slab of size 6m × 6m with suitable drop to support a live load of 5kN/m². The floor system is supported by columns of size 500mm × 500mm. floor to floor distance is 3.6m. use m20 grade of concrete and Fe-415 grade of steel</p> <p>(or)</p>	14	3	3	3
16	<p>Design a suitable foundation for the column of size 500mm × 500mm, SBC of soil under the column is 200kN/m². Use M20 grade of concrete and Fe-415 grade of steel, sketch the reinforcement details in the foundation component.</p>	14	4	3	3

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

i)	Blooms Taxonomy Level – 1	20
ii)	Blooms Taxonomy Level – 2	30
iii)	Blooms Taxonomy Level – 3 & 4	50
