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**PRESIDENCY UNIVERSITY
BENGALURU**

SET A

**SCHOOL OF ENGINEERING
END TERM EXAMINATION - JAN 2024**

Semester : Semester VII - 2020

Course Code : CIV3008

Course Name : Advanced Rcc Structures

Program : B.Tech.

Date : 04-JAN-2024

Time : 9:30AM - 12:30 PM

Max Marks : 100

Weightage : 50%

Instructions:

- (i) Read all questions carefully and answer accordingly.
 - (ii) Question paper consists of 3 parts.
 - (iii) Scientific and non-programmable calculator are permitted.
 - (iv) Do not write any information on the question paper other than Roll Number.
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PART A

ANSWER ALL THE QUESTIONS

4 X 5M = 20M

1. Define a Flat slab. Mention the various types of flat slabs.
(CO1) [Knowledge]
2. What is a combined footing? Mention the types of combined footing based on the shape.
(CO2) [Knowledge]
3. Distinguish between circular water tanks and rectangular water tanks based on their design considerations.
(CO3) [Knowledge]
4. What is a portal frame? Mention the different types of structures that are built using the portal frames.
(CO4) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS

5 X 10M = 50M

5. A cylindrical tank of capacity 6,00,000 liters is resting on good unyielding ground. The depth of tank is limited to 5m. A free board of 300 mm may be provided. The wall and the base slab are cast integrally. Design the tank using M20 concrete and Fe415 grade steel.
(CO3) [Comprehension]

6. For the design of cylindrical water tank with rigid base, Draw the following i) Plan at base ii) Sectional elevation of the tank.
(CO3) [Comprehension]
7. Design a rectangular water tank 6m x 4m with depth of storage 3.5m, resting on ground and whose walls are rigidly joined at vertical and horizontal edges. Design the water tank for vertical moment. Assume M20 concrete and Fe415 grade steel.
(CO3) [Comprehension]
8. For the design of rectangular water tank with rigid base, Draw the following i) Plan at base ii) Sectional elevation of the tank.
(CO3) [Comprehension]
9. For the design of rectangular water tank resting on ground with rigid base. Design for the horizontal moment. Assume M20 grade concrete and Fe415 grade steel.
(CO3) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS

2 X 15M = 30M

10. The roof of a 10m wide hall is supported on a 3-bay portal frame spaced at 5m intervals. The height of the portal frame is 5m. The continuous slab is 120 mm thick. Live load on roof = 2.5 kN per sq.m, SBC of soil = 140 kN per sq.m. The columns are connected with a plinth beam and the base of the column may be assumed as fixed. Design the slab, column and beam members of the portal frame. Adopt M20 grade concrete and Fe415 steel.
(CO4) [Application]
11. Design the footing of portal frame for the given data. Adopt M20 grade concrete and Fe415 grade steel. Sketch the reinforcement details of the portal frame.
(CO4) [Application]