Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – December 2025

Date: 11 – 12- 2025 **Time:** 09:30am – 12:30pm

School: SOE	**Program:** B.Tech (Civil Engineering)	
Course Code : CIV2100	**Course Name:** Building Materials and Concrete Technology	
Semester: III	**Max Marks**: 100	**Weightage**: 50%

CO - Levels	CO1	CO2	CO3	CO4	CO5	CO6
Marks	6	4	10	24	31	25

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

(iii) Use of IS10262-2019 is allowed

Part A

Answer ALL the Questions. Each question carries 2marks. **10Q x 2M=20M**

1.	List any two characteristics of first-class bricks.	**2 Marks**	**L1**	**CO1**
2.	List three moisture states of aggregate	**2 Marks**	**L1**	**CO1**
3.	Mention the difference between English bond and Flemish bond.	**2 Marks**	**L1**	**CO1**
4.	What is the bulking of sand?	**2 Marks**	**L1**	**CO2**
5.	Define timber and state two of its common uses in construction.	**2 Marks**	**L1**	**CO2**
6.	What is the purpose of using retarders in concrete?	**2 Marks**	**L1**	**CO4**
7.	Define shotcrete and mention its types.	**2 Marks**	**L1**	**CO4**
8.	What is the gel–space ratio in concrete?	**2 Marks**	**L1**	**CO5**
9.	Why is the compressive strength of concrete tested at 28 days?	**2 Marks**	**L1**	**CO5**
10.	Define Shrinkage in concrete.	**2 Marks**	**L1**	**CO5**

Part B

Answer the Questions. **Total Marks 80M**

11.	**a.**	Discuss the **chemical composition of cement** and roles of major oxides. List the 4 bogues compound.	**10 Marks**	**L2**	**CO3**
		Or			
12.	**a.**	Discuss the production, properties and effects of **Fly Ash and Silica Fume as mineral admixture** on concrete.	**10 Marks**	**L2**	**CO3**

13.	**a.**	Describe the VeeBee Test of fresh concrete in detail	**10 Marks**	**L2**	**CO4**
		Or			
14.	**a.**	What is the workability of concrete? Explain all the factors affecting workability in detail.	**10 Marks**	**L2**	**CO4**

15.	**a.**	Explain the Slump Test in detail for determining the workability of fresh concrete. Describe the types of slump with neat sketches and discuss their significance.	**10 Marks**	**L2**	**CO4**
		Or			
16.	**a.**	Discuss **bleeding** in concrete. Explain its cause, effect, and prevention methods.	**7 Marks**	**L2**	**CO4**
	b.	Write detailed notes on **Ready Mix Concrete (RMC)**	**3 Marks**	**L2**	**CO4**

17.	**a.**	Write a detailed note on Flexural test of concrete	**5 Marks**	**L2**	**CO5**
	b.	Explain the split tensile strength of concrete in detail	**5 Marks**	**L2**	**CO5**
	c.	Discuss in detail the types of shrinkage in concrete	**5 Marks**	**L2**	**CO5**
		Or			
18.	**a.**	Explain the procedure of the Compressive test of concrete	**5 Marks**	**L2**	**CO5**
	b.	Explain how concrete gains strength with age. What is the maturity concept?	**5 Marks**	**L2**	**CO5**
	c.	Discuss the various factors influencing the creep of concrete.	**5 Marks**	**L2**	**CO5**

19.	**a.**	Write a short note on (i) water cement ratio by Abram's law (ii) Moisture movement of concrete	10 **Marks**	**L2**	**CO**5
	b.	What are the factors that affect shrinkage in concrete? Explain in brief.	**5 Marks**	**L2**	**CO6**
		Or			

20.	**a.**	Describe the step-by-step procedure for concrete mix design.	**10 Marks**	**L2**	**CO5**
	b.	What are the different grades of concrete, and mention their applications.	**5 Marks**	**L2**	**CO6**

21.	**a.**	**Design a concrete mix for M35 grade concrete as per IS10262: 2019 using the following data** Type of cement: PPC conforming to IS 1489 (Part 1) Maximum nominal size of aggregate 10mm Minimum cement content 320 kg/m^3 (as per IS456) Maximum free water-cement ratio 0.45 (as per IS456) Workability 125 mm slump Exposure condition severe (For Reinforced Concrete) Method of concrete placing pumping Degree of supervision Good Chemical admixture type: Super Plasticizer -normal The specific gravity of cement 2.88 The specific gravity of coarse aggregate 20mm 2.75 The specific gravity of fine aggregate 2.66 The specific gravity of Chemical admixture 1.145 Water absorption of coarse aggregate 0.5 % Water absorption of fine aggregate 1 % Grading of coarse aggregates is conforming to Table 2 of IS383 and grading of Fine aggregates falling in Zone II Zone II	**20 Marks**	**L4**	**CO6**
		Or			
22.	**a.**	**Design a concrete mix for M35 grade concrete as per IS10262: 2019 using the following data** Type of cement: OPC 43 Grade conforming IS 12269 Type of fly ash: GGBS conforming to IS 16714 (30% replacement) Maximum nominal size of aggregate 20mm Minimum cement content 320 kg/m^3 (as per IS456) Maximum free water-cement ratio 0.45 Workability 120 mm slump Exposure condition severe (For Reinforced Concrete) Method of concrete placing Non pumpable Degree of supervision Good The specific gravity of cement 3.15 The specific gravity of GGBS 3 The specific gravity of coarse aggregate 20mm 2.78 The specific gravity of fine aggregate 2.70	**20 Marks**	**L**	**CO**

		Water absorption of coarse aggregate Water absorption of fine aggregate Grading of coarse aggregates conforms to Table 2 of IS383, and grading of Fine aggregates falling in Zone II	Nil Nil Zone II		