U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

August 2024 Semester End Main Examinations

Programme: B.E. **Semester: IV**
Branch: Civil Engineering **Duration: 3 hrs.**
Course Code: 23CV4PCCON **Max Marks: 100**
Course: Concrete Technology

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.
3. Use of IS 10262- 2019 is permitted.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

				CO	PO	Marks
			UNIT – I			
1	a)		Illustrate the process of hydration and explain the role of different Bogue's compound in the hydration process.	*CO* 1	*PO1*	**10**
	b)		Discuss the effect of size, shape, texture and specific weight of the aggregates on the properties of concrete.	*CO* 1	*PO1*	**10**
			OR			
2	a)		Identify Bouge's Compounds and discuss their relations in attaining strength and setting of concrete.	*CO* 1	*PO1*	**10**
	b)		Explain the mechanism of action of super plasticizer in modifying the properties of concrete.	*CO* 1	*PO1*	**6**
	c)		List the different sustainable materials used in concrete alternate to cement and natural aggregates.	*CO* 1	*PO1*	**4**
			UNIT – II			
3	a)		Define workability and explain the factors affecting workability.	*CO* 1	*PO1*	**10**
	b)		Illustrate the concept of segregation and bleeding considering the practical examples.	*CO* 1	*PO1*	**10**
			UNIT - III			
4	a)		Differentiate between nominal mix and design mix.	*CO* 2	*PO1*	**4**
	b)		Arrive at the concrete mix design concrete. B-*1 STIPULATIONS FOR PROPORTIONING* a) Grade designation: M40 b) Type of cement: OPC 53 grade conforming to IS 269 c) Type of mineral admixture: GGBS d) Maximum nominal size of aggregate: 20 mm e) Minimum cement content: Severe (for reinforced concrete) f) Workability: 100 mm (slump) g) Method of concrete placing: Pumping	*CO* 2	*PO3*	**16**

			h) Degree of supervision: Good j) Type of aggregate: Angular k) Maximum cement content: 450 kg/m^3 m) Chemical admixture type: Super plasticizer *B-2 TEST DATA FOR MATERIALS* a) Specific gravity of cement 3.12 b) Specific gravity of GGBS: 2.95 c) Specific gravity of 1) Coarse aggregate (at SSD condition): 2.70 2) Fine aggregate (at SSD condition): 2.65 3) Chemical admixture: 1.145			
			UNIT – IV			
	5	a)	Explain the factors affecting compressive strength of a concrete	***CO*** 2	***PO1***	**10**
		b)	Explain the working principle and application of Ultrasonic pulse velocity test.	***CO*** 2	***PO1***	**10**
			OR			
	6	a)	Demonstrate the process to determine the modulus of elasticity of concrete.	***CO*** 2	***PO1***	**10**
		b)	Explain drying and autogenous shrinkage in concrete	***CO*** 2	***PO1***	**10**
			UNIT – V			
	7	a)	Discuss the various factors affecting the durability of concrete.	***CO*** 2	***PO1***	**10**
		b)	Demonstrate the process of carbonation and alkali aggregate reaction in concrete.	***CO*** 2	***PO1***	**10**

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