U.S.N.										

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

Autonomous Institute Affiliated to VTU

August 2024 Supplementary Examinations

Programme: B.E. **Semester: V**
Branch: Civil Engineering **Duration: 3 hrs.**
Course Code: 20CV5PEACT **Max Marks: 100**
Course: ADVANCED 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.

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.			**UNIT – I**	
	1	a)	Explain the progress of Composite Cement over time.	**10**
		b)	Identify the ways of utilizing the demolished concrete in efficient way by comparing all the properties with Normal Concrete.	**10**
			UNIT – II	
	2	a)	Compare the mix compositions of Normal Concrete & Self Compacting Concrete.	**04**
		b)	Discuss the need for self-compacting concrete in the construction industry and the requirements to produce self-compacting concrete.	**06**
		c)	Design a SCC mix as proposed by Okamura for the following data. Air content - 2%, Dry rodded density of CA-1.58 Water / powder ratio-0.9 SG**cement**-3.15 SG**Flyash**-2.10 SG**FA**-2.60 SG**CA**-2.68 SG**SP** -1.08. Cement + Filler ratio – 60:40 Water absorption CA - 0.35%, Water absorption FA -1.0% (FA-Fine Aggregate) (SG- Specific Gravity, FA-Fine Aggregates, CA-Coarse Aggregates, SP-Super Plasticizer)	**10**
			OR	
	3	a)	Articulate the limitations of Empirical methods (Slump Test).	**06**
		b)	Explain briefly the factors affecting the Rheology of concrete.	**06**
		c)	Discuss the Bingham model used for assessment of rheology of concrete.	**08**

			UNIT - III	
	4	a)	Relate the mechanical properties of FRC (Fiber Reinforced Concrete) with Normal concrete?	**10**
		b)	Explain the applications of Steel Fiber reinforced concrete.	**06**
		c)	List the applications of Ductal concrete in construction industry.	**04**
			UNIT – IV	
	5	a)	List out the supplementary cementitious materials and discuss the importance of any two such materials in concrete.	**10**
		b)	Explicate the different ways of making light weight concrete.	**10**
			OR	
	6	a)	Summarize the technology enhancement of fresh, hardened and durability properties of High performance concrete.	**10**
		b)	Explain the prepacked method of manufacturing high density concrete.	**10**
			UNIT – V	
	7	a)	Articulate the Mix design Procedure for GPC (Geopolymer concrete) with the help of typical numerical example.	**14**
		b)	Discuss the applications of Geopolymer concrete as a novel material in construction industry.	**06**

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