

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

Autonomous Institute Affiliated to VTU

**September / October 2024 Supplementary Examinations****Programme: B.E.****Branch: Civil Engineering****Course Code: 19CV4PCCON****Course: CONCRETE TECHNOLOGY****Semester: IV****Duration: 3 hrs.****Max Marks: 100**

**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.

		<b>UNIT – I</b>	<b>CO</b>	<b>PO</b>	<b>Marks</b>																
1	a)	Identify Bouge’s compounds? Explain their role in strength development with related chemical reactions.	CO 1	PO1	<b>10</b>																
	b)	Summarize the influence of shape, size & texture of an aggregates influence on properties concrete?	CO 1	PO1	<b>6</b>																
	c	Differentiate between Flash set and False set.	CO 1	PO1	<b>4</b>																
		<b>OR</b>																			
2	a)	List the different types of cement with at least one application.	CO 1	PO1	<b>6</b>																
	b)	Explain the importance of the interfacial transition zone in concrete with a sketch.	CO 1	PO1	<b>8</b>																
	c)	Arrive at the fineness modulus for the given sample and identify the type of sand as per specification based on fineness modulus. Note: Weight is given in grams. <table> <tr> <th>BS sieve</th> <th>Weight retained</th> </tr> <tr> <td>4.75 mm</td> <td>0 g</td> </tr> <tr> <td>2.36 mm</td> <td>16 g</td> </tr> <tr> <td>1.18 mm</td> <td>24 g</td> </tr> <tr> <td>600 μm</td> <td>48 g</td> </tr> <tr> <td>300 μm</td> <td>43 g</td> </tr> <tr> <td>150 μm</td> <td>21 g</td> </tr> <tr> <td>Pan</td> <td>8 g</td> </tr> </table>	BS sieve	Weight retained	4.75 mm	0 g	2.36 mm	16 g	1.18 mm	24 g	600 μm	48 g	300 μm	43 g	150 μm	21 g	Pan	8 g	CO 1	PO3	<b>6</b>
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		<b>UNIT – II</b>																			
3	a)	Describe the mechanism of action of super plasticizers in modifying fresh property of concrete with sketch.	CO 2	PO1	<b>10</b>																
	b)	Enumerate GGBS as secondary cementitious material in Concrete and influence of the same on both fresh and hardened properties of concrete.	CO 2	PO1	<b>10</b>																

		<b>UNIT - III</b>			
4	a)	Define workability of concrete? Explain the factors affecting workability of concrete.	CO 2	PO1	<b>10</b>
	b)	Differentiate between Segregation and Bleeding of concrete.	CO 2	PO1	<b>6</b>
	c)	List out the different methods of curing of concrete.	CO 2	PO1	<b>4</b>
		<b>UNIT - IV</b>			
5	a)	Discuss the factors influencing the mix proportioning of concrete.	CO 3	PO1	<b>5</b>
	b)	Design a concrete mix for proportion of <b>M30</b> grade for the following data: Data: OPC-53 confirming to IS: 12269-1987 Maximum size of aggregate: 20mm Min/max cement content: 320/450 kg/m <sup>3</sup> Maximum water cement ratio: 0.45 Exposure condition: Moderate Workability =100mm (Slump) Method of concrete placing- Pumping Degree of supervision: Good Type of aggregate: Sub angular aggregate Test data for materials: Specific gravity of cement-3.15 GGBS: 20% of cementitious material content Specific gravity of GGBS: 2.9 Chemical admixture type: Super plasticizer (specific gravity-1.15) Specific gravity of coarse aggregates-2.65 Specific gravity of fine aggregates-2.60 Fine aggregates-zone II	CO 3	PO3	<b>15</b>
		<b>UNIT - V</b>			
6	a)	Define and explain the factors effecting the modulus of elasticity of concrete.	CO 4	PO1	<b>10</b>
	b)	Discuss the mechanism of corrosion of concrete with sketch.	CO 4	PO1	<b>10</b>
		<b>OR</b>			
7	a)	Summarize the basic hardened tests conducted to assess the strength of the concrete and also compare their interrelation properties.	CO 4	PO1	<b>10</b>
	b)	Articulate the objectives of NDT & also report the limitations of Rebound hammer test.	CO 4	PO1	<b>6</b>
	c)	Discuss Sulphate attack of concrete.	CO 4	PO1	<b>4</b>

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