

BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT

(Autonomous Institute under Visvesvaraya Technological University, Belagavi)

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Course Code

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Fourth Semester B.E. Degree Examinations, July 2026

CONCRETING TECHNIQUES AND PRACTICES

Duration: 3 hrs

Max. Marks: 100

Note: 1. Answer any FIVE full questions choosing ONE full Question from each Module.
 2. Missing data, if any, may be suitably assumed

<u>Q. No</u>	<u>Question</u>	<u>Marks</u>	<u>(RBT:CO: PI)</u>
<u>Module-1</u>			
1.	a. Briefly explain chemical composition and hydration process of cement in detail.	10	(2:1:1.2.1)
	b. Define admixtures. List types of admixtures used in concrete, explain any two admixtures in detail.	10	(2:1:1.2.1)
(OR)			
2.	a. Write a short note on (i) Rice husk ash (ii) Ultrafine materials	10	(2:1:1.2.1)
	b. Define low carbon cement. Briefly explain properties and advantages of low carbon cement.	10	(2:1:1.2.1)
<u>Module-2</u>			
3.	a. Define chemical admixtures and explain ideal requirement of chemical admixtures.	10	(2:2:1.2.1)
	b. Why gradation of aggregates is important in concrete mix design?	10	(2:2:1.2.1)
(OR)			
4.	a. Which are the sources of water and chemical admixtures? List its limitation to use in concrete.	10	(2:2:1.2.1)
	b. How does the blending of fine and coarse aggregates impact practical implementation?	10	(2:2:1.2.1)
<u>Module-3</u>			
5.	Design a concrete mix by absolute volume method for M-30 Grade with the following requirements as specified for non-air entrained concrete as per ACI 211.1-91: (i) Target compressive strength= 30MPa (ii) Target Slump= 75 to 100mm (iii) Maximum size of aggregate= 19mm (iv) Specific gravity of cement= 3.15 (v) Specific gravity of fine aggregate= 2.65 (vi) Specific gravity of coarse aggregate= 2.75 (vii) Fineness modulus of fine aggregate= 2.8 (viii) Dry rodded bulk density= 1600 kg/m ³ (ix) Moisture content adjustment for aggregates •Water absorption of coarse aggregate= 1% •Free surface moisture in fine aggregate= 2% (x) Cement used Ordinary Portland cement	20	(3:3:3.1.4)

Note: (RBT - Revised Bloom's Taxonomy Level: CO - Course Outcome: PI- Performance Indicator)

(OR)

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| 6. | a. Define workability and explain the factors affecting workability of concrete. | 10 | (2:3:1.2.1) |
| | b. Explain high performance concrete with its constituents, characteristics and specific applications. | 10 | (2:3:1.2.1) |

Module-4

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| 7. | a. Why RMC is having more advantages than traditional concrete mixing. | 10 | (2:4:1.2.1) |
| | b. Explain in detail about vibration and compaction of concrete. | 10 | (2:4:1.2.1) |

(OR)

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| 8. | a. Write a detailed note on mixing of concrete and transportation of concrete. | 10 | (2:4:1.2.1) |
| | b. Briefly explain process of concrete curing and its protection. | 10 | (2:4:1.2.1) |

Module-5

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| 9. | a. Write a detailed explanation of the following concrete.
(i) 3D Printing concrete (ii) Dry lean concrete. | 10 | (2:5:1.2.1) |
| | b. Briefly explain self-compacting concrete with its applications, advantages and disadvantages in detail. | 10 | (2:5:1.2.1) |

(OR)

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| 10. | a. How the vibration and compaction does improves the strength and performance of the concrete? | 10 | (2:5:1.2.1) |
| | b. Briefly explain geopolymer concrete with its applications, advantages and disadvantages in detail. | 10 | (2:5:1.2.1) |

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