



Fifth Semester B.E./B.Tech. Degree Examination, June/July 2025

**Concrete Technology**

Time: 3 hrs.

Max. Marks: 100

- Notes: 1. Answer any FIVE full questions, choosing ONE full question from each module.  
 2. M : Marks , L: Bloom's level , C: Course outcomes.  
 3. Use of IS 456 : 2000, IS 10262 : 2019 is permitted.

Module – 1			M	L	C
Q.1	a.	Explain briefly the different types of cement.	10	L2	CO1
	b.	Explain briefly the properties of fine aggregate and coarse aggregate.	10	L2	CO1
OR					
Q.2	a.	Briefly explain the tests on properties of cement.	7	L2	CO1
	b.	What is meant by admixture and what are the benefits of admixtures?	7	L2	CO1
	c.	Explain : i) Accelerating admixture ii) Retarding admixtures iii) Water reducing admixtures.	6	L2	CO1
Module – 2					
Q.3	a.	What are the factors affecting workability? Explain briefly the measurement of workability.	10	L2	CO2
	b.	Explain segregation of concrete and bleeding in concrete.	10	L2	CO2
OR					
Q.4	a.	Explain the process of manufacture of concrete.	10	L2	CO2
	b.	What is curing? Explain : i) Water curing ii) Membrane curing iii) Steam curing iv) Accelerated curing.	10	L2	CO2
Module – 3					
Q.5	a.	What are the factors influencing strength of concrete? Explain.	10	L2	CO2
	b.	Explain maturity concept and testing of hardened concrete.	10	L2	CO2
OR					
Q.6	a.	Explain shrinkage and creep of concrete. What are the factors affecting shrinkage and creep of concrete.	7	L2	CO2
	b.	Define durability. Explain the significance of durability and what are the factors affecting durability.	7	L3	CO2
	c.	Explain : i) Rebound hammer test ii) Penetration resistance test iii) Pull out test iv) Ultrasonic pulse velocity test.	6	L3	CO2
Module – 4					
Q.7	a.	What are the objectives of mix design? Explain the factors to be considered for mix design.	10	L3	CO2
	b.	Explain the selection criteria of ingredients used for mix design. What is the procedure of mix proportioning?	10	L3	CO2
1 of 2					

OR

<b>Q.8</b>	Design a concrete mix of M30 Grade as per IS 10262-2019 with the following conditions :	<b>20</b>	<b>L4</b>	<b>CO3</b>
	i) Grade designation – M30 ii) Type of cement – OPC 53 grade iii) Max. Nominal size of aggregate – 20 mm down iv) Min. Cement content – 300 kg/m <sup>3</sup> v) Workability : Slump – 75 mm vi) Exposure condition – moderate vii) Method of concrete placing – manual viii) Max. cement content – 450 kg/m <sup>3</sup> ix) Chemical admixture – 2% by mass of cement x) Fine aggregate zone – zone II xi) Specific gravity of cement – 3.12 xii) Specific gravity of coarse aggregate – 2.72 xiii) Water absorption – 1% xiv) Free surface moisture – Nil xv) Specific gravity of fine aggregate – 2.64 xvi) Water absorption – 2% xvii) Free surface moisture contact – 2%.			

## Module – 5

<b>Q.9</b>	<b>a.</b>	What is Ready Mixed Concrete (RMC)?	<b>2</b>	<b>L3</b>	<b>CO4</b>
	<b>b.</b>	Explain the manufacture, requirements, properties, advantages and disadvantages of RMC.	<b>9</b>	<b>L3</b>	<b>CO4</b>
	<b>c.</b>	Explain briefly Self-Compacting Concrete (SCC). What is the concept of SCC, materials, tests, properties and applications of SCC?	<b>9</b>	<b>L3</b>	<b>CO4</b>

OR

<b>Q.10</b>	<b>a.</b>	Explain Fiber Reinforced Concrete (FRC), types of fibers, properties and applications of FRC.	<b>6</b>	<b>L3</b>	<b>CO4</b>
	<b>b.</b>	Explain light weight concrete. What are the materials, properties, types and applications of light weight concrete?	<b>6</b>	<b>L3</b>	<b>CO4</b>
	<b>c.</b>	Explain briefly Geopolymer concrete. Distinguish between high performance concrete and high strength concrete.	<b>8</b>	<b>L3</b>	<b>CO4</b>

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