

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

M.E DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

First Semester

Construction Engineering and Management

PCNE2401 / CN4071 – Advanced Concrete Technology

(Use of IS 10262:2009 is permitted)

Regulations – 2021 & 2024

Duration : 3 Hrs

Maximum : 100 Marks

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	Questions	BLT	CO	Marks
1.	List out the bogue's compound.	RE	1	2
2.	What is bulking of sand.	UN	1	2
3.	Write the significance of standard deviation in concrete mix design.	UN	2	2
4.	Calculate target mean strength for M30 grade of concrete as per IS code.	AP	2	2
5.	Extend the methods of transportation of concrete.	UN	3	2
6.	Infer the term underwater concrete.	UN	3	2
7.	Explain what qualifies concrete as "high-performance".	UN	4	2
8.	Mention the benefits of fiber reinforcement in concrete.	UN	4	2
9.	Identify the reasons for segregation in fresh concrete.	UN	5	2
10.	Classify the types of shrinkage in concrete.	UN	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)

Q.No	Questions	BLT	CO	Marks
11.	a Explain the steps involved in the manufacture of cement using the dry process.	UN	1	13
	Or			
	b Identify and discuss the importance of workability agents and the types of admixtures used to enhance workability in concrete.	UN	1	13
12.	a Design a concrete mix for M30 grade concrete by IS method using the following data: Characteristics compressive strength: 30 N/mm ² Maximum size of aggregates: 20mm angular Degree of quality of concrete: Good Types of exposure: Severe Compaction factor: 0.87 Specific gravity of cement: 3.15 Specific gravity of coarse aggregate: 2.65 Specific gravity of fine aggregate: 2.68 Water absorption of coarse aggregate: 1.2% Water absorption of fine aggregates: 1.5% Grading of coarse aggregate: Confirms to table 2 of IS: 383-1970 Grading of fine aggregate: Confirm to zone II of IS 383-1970	AP	2	13

Or

	b	Describe the sampling methods and acceptance criteria for concrete quality as specified by ACI and IS codes.	AP	2	13
13.	a	Identify common causes of cracking in concrete and discuss strategies for minimizing plastic shrinkage during the curing process.	UN	3	13
		Or			
	b	Explain the step by step procedure of vacuum dewatering for concrete.	UN	3	13
14.	a	Assess the effectiveness of fiber reinforcement in improving concrete's mechanical properties and evaluate its impact on crack resistance and durability in high-stress applications.	UN	4	13
		Or			
	b	Analyze the key properties of self-compacting concrete, and evaluate its benefits and limitations when used in large-scale, complex infrastructure projects.	UN	4	13
15.	a	Explain the effects of creep and shrinkage on the long-term performance of concrete structures.	AP	5	13
		Or			
	b	Assess the role of durability in concrete and its impact on the sustainability of construction practices.	AP	5	13

*PART – C (Marks 1*15 = 15)*

<i>Q.No</i>		<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
16.	a	Describe the hydration reaction of important bogue compounds indicating the product of hydration.	AP	1	15
		Or			
	b	Compare and contrast various non-destructive testing techniques used to assess the quality and durability of concrete. Discuss their effectiveness in evaluating the microstructure of concrete.	AP	5	15