NARASIMHAREDDYENGINEERINGCOLLEGE

(Autonomous)

Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad

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CIVIL ENGINEERING

QUESTION BANK

CourseTitle : CONCRETE TECHNOLOGY

Course Code : CE3102PC

Regulation : NR21

COURSE OBJECTIVES:

Concrete is the basic construction material in the advance and present construction industry Lot ofadvances are taking place in the concrete technology on par with development taking place in the engineering. The present day industry needs the knowledge of concrete technology thoroughly. The subject is designed to give the basic knowledge as well as latest developments in concrete technology.

COURSE OUTCOMES:

After completing this course, the students will be able to:

CO1: Identify quality control tests on concrete making materials.
CO1: Understand the suitability of aggregates as construction materials.
CO1: Understand the behavior of fresh concrete.
CO1: Determine the strength of hardened concrete.
CO1: Design concrete mixes as per IS and ASI codes and understand the importance of special concrete.

UNIT–I

S.No	Questions	BT	CO	PO
	Part –A (Short Answer Questions)			
1	What is cement? State the important ingredients in cement with their percentages.	L4	CO1	1,2
2	State four precautions to be taken while manufacturing of cement.	L1	CO1	1,2
3	Define the terms a) workability b)hydration c) initial set d) final set.	L1	CO1	1,2
4	State four important properties of cement.	L1	CO1	1,2
5	What is admixtures and state the functions of concrete.	L2	CO1	1,2
6	What is cement primarily made from?	L1	CO1	1,2
7	What are the main types of cement used in construction?	L1	CO1	1,2
8	What are some common additives used in cement?	L2	CO1	1,2
9	What are the environmental impacts of cement production?	L1	CO1	1,2

10		How does temperature affect the curing of cement?	L1	CO1	1,2
Part– B(Long Answer Questions)					
11		State the chemical composition of the cement with their percentage to achieve the desired quality ofcement.	L2	CO1	1,2
12		Distinguish the manufacture of cement by dry and wet process.	L1	CO1	1,2
13		What is pozzolanic materials. State the properties, advantages and disadvantages of pozzolana cements.	L1	CO1	1,2
14	a)	What is admixture and state functions in concrete.	L2	CO1	1,2
	b)	Explain the chemical composition of ordinary Portland cement and its functions.	L2	CO1	1,2
15		State the classification of admixtures for generalpurposes explains in briefly.	L2	CO1	1,2
16		state the tests to be conducted to find the sustainability of cement and briefly explain tensilestrength test and setting time of cement	L2	CO1	1,2

UNIT–II

S.No		Questions	BT	CO	PO
Part –A (Short Answer Questions)					
1		State the classification of aggregates.	L1	CO2	1,4
2		State the four qualities of mixed water	L2	CO2	1,4
3		What is bulking of sand? Explain in four sentences.	L1	CO2	1,4
4		Write the properties of good concrete.	L1	CO2	1,4
5		Write the properties of good concrete.	L1	CO2	1,4
6		How does the size of aggregates affect the strength and workability of concrete?	L1	CO2	1,4
7		Why is it important to test aggregates for cleanliness before using them in concrete?	L1	CO2	1,4
8		What are some common tests conducted to assess the quality of aggregates?	L1	CO2	1,4
9		How does moisture content in aggregates affect concrete mixing and curing?	L4	CO2	1,4
10		What is the difference between coarse aggregates and fine aggregates?	L2	CO2	1,4
Part– B(Long Answer Questions)					
11	a)	Define aggregate? State the various classification of aggregate and explain briefly.	L2	CO2	1,4
	b)	What are the various tests conducted for the satisfactory performance of aggregate	L1	CO2	1,4
12	a)	What is alkali aggregate reaction and what are the factors which affect this reaction. How can thisreaction be controlled	L4	CO2	1,4
13	a)	Explain brieflythe specific gravity and water absorption test	L2	CO2	1,4
	b)	Explain the factors affecting alkali-aggregate reaction and its control measures.	L1	CO2	1,4
14	a)	State the importance of fine and coarse aggregate suitable for the preparation of R.C.C elements ofheavy R.C.C structures.	L1	CO2	1,4
15	b)	Explain any two general purpose admixtures.	L1	CO2	1,4
16	a)	Explain different characteristics of aggregates.	L1	CO2	1,4
	b)	Explain in detail about characteristics of aggregates.	L2	CO2	1,4

UNIT–III

S.No		Questions	BT	CO	PO
Part –A (Short Answer Questions)					
1		What is concrete and how it is made?	L1	CO3	1,6
2		What is curing of concrete? State its necessity?	L1	CO3	1,6
3		Define water cement ratio. How does it influence the concrete strength.	L1	CO3	1,6
4		What is workability state the various tests for measurement of workability.	L2	CO3	1,6
5		What is grading of concrete? What is meant by M20 grade concrete.	L2	CO3	1,6
6		What is the workability of fresh concrete, and why is it important?	L1	CO3	1,6
7		What factors can affect the setting time of fresh concrete?	L2	CO3	1,6
8		What is the purpose of adding water to fresh concrete, and how does it affect the mixture?	L1	CO3	1,6
9		What are the typical procedures for transporting and placing fresh concrete to ensure quality?	L2	CO3	1,6
10		Why is it crucial to properly mix fresh concrete?	L2	CO3	1,6
Part– B(Long Answer Questions)					
11	a)	what are the various types of concrete used in the construction works? Describe the procedure forpreparing concrete.	L3	CO3	1,6
12	a)	what are the requirements of good concrete and describe the factors affecting the strength ofconcrete	L3	CO3	1,6
	b)	Define water cement ratio. How does it influence the concrete strength.	L2	CO3	1,6
13		what are the various factors affecting the workability of concrete. Explain briefly?	L2	CO3	1,6
14	a)	what are the various methods of measurement of workability?	L2	CO3	1,6
	b)	What are the various types of concrete used in the construction works? Explain the procedure forpreparing concrete.	L2	CO3	1,6
15	a)	what are the various methods of transporting the concrete? Discuss various methods of placing concrete. what precautions should be taken during placing.	L2	CO3	1,6
	b)	write a short notes on the following: a)types of shoring b)types of under pinning c) form work for water tanks	L2	CO3	1,6
16	a)	what are the various factors affecting the workability of concrete. Explain briefly?	L2	CO3	1,6
	b)	distinguish steel form work and timber form work?	L2	CO3	1,6

UNIT–IV

S.No	Questions	BT	CO	PO
Part –A (Short Answer Questions)				
1	What is gel-space ratio.	L1	CO4	1,3
2	Define abrahms law relating to cement concrete.	L1	CO4	1,3
3	State four factors affecting the strength of concrete.	L1	CO4	1,3
4	State necessity of curing for cement concrete.	L2	CO4	1,3
5	State six principle properties of hardened concrete.	L2	CO4	1,3
6	How is the curing process crucial to the development of concrete	L1	CO4	1,3

		strength?			
7		What methods are used to test the durability of hardened concrete?	L1	CO4	1,3
8		What role does aggregate quality play in the strength and durability of hardened concrete?	L1	CO4	1,3
9		What is the significance of the concrete mix design in determining the properties of hardened concrete?	L2	CO4	1,3
10		How does the water-cement ratio affect the properties of hardened concrete?	L1	CO4	1,3

Part– B(Long Answer Questions)					
11		State and explain the various types of form work for concrete elements with neat sketches	L2	CO4	1,3
12		Distinguish steel form work and timber form work?	L2, L3	CO4	1,3
13		What is centering. State and explain the types of centering for arches.	L1	CO4	1,3
14	a)	State and explain briefly the different types of scaffolding.	L3	CO4	1,3
	b)	What is centering. State and explain the types of centering for arches.	L2	CO4	1,3
15	a)	Write a short notes on the following: a)types of shoring b)types of under pinning c) form work for water tanks	L1	CO4	1,3
	b)	Distinguish steel form work and timber form work?	L2		1,3
16		Analyze the different testing methods used to assess the durability of hardened concrete. What tests are commonly employed, and how do they help in evaluating concrete's resistance to environmental factors?	L2	CO4	1,3

UNIT–V

S.No		Questions	BT	CO	PO
Part –A (Short Answer Questions)					
1		Define concrete mix design and state the principle of mix design?	L1	CO5	1,6
2		State 10 requirements of concrete mix design	L1	CO5	1,6
3		Discuss briefly the following with regards to mix design. a) workability b) strength	L1	CO5	1,6
4		Define target mean strength and controlled concrete.	L1	CO5	1,6
5		State the advantages of roller compacted concrete in construction industry.	L1	CO5	1,6
6		What factors influence concrete mix design?	L1	CO5	1,6
7		How do you calculate the mix proportions in concrete design?	L2	CO5	1,6
8		What is the difference between nominal and designed mix?	L2	CO5	1,6
9		What is self-consolidating concrete (SCC)?	L1	CO5	1,6
10		What is lightweight concrete?	L1	CO5	1,6
Part– B(Long Answer Questions)					
11	a)	What are the special features of transportation of ready mixed concrete from the plant to the site?	L2	CO5	1,6
	b)	Discuss the properties and applications of self-consolidating concrete (SCC). How does SCC differ from conventional concrete in terms of its mix design and performance?	L4	CO5	1,6

12	a)	What special features are to be considered while handling and placing ready mixed concrete.	L2	CO5	1,6
	b)	Analyze the advantages and limitations of high-strength concrete (HSC). How is HSC produced, and what are its typical applications in modern construction?	L2	CO5	1,6
13	a)	Design a concrete mix for the following requirements using IS method. Also find the mix proportions by weight and by volume. M40 grade , OPC cement, sp gravity – 3.15, bulk density – 1440kg/m3, sand – grading zone I , sp gravity – 2.65, bulk density – 1610kg/m3 Coarse aggregate – 10mm angular, sp gravity – 2.66, bulk density – 1580kg/m3 Degree of workability – 0.85 compacting factor, quality control – very good	L4	CO5	1,6
14	a)	Design a M30 grade concrete with compaction factor of 0.9 by IS code method for moderate exposure and good quality control conditions using 20mm coarse aggregate which conforms to IS 383 grading . sp gravity of cement , fine and coarse aggregates is 3.15, 2.65 and 2.60 respectively. Water absorption of CA and FA is 0.5% and 1.0% respectively. Natural moisture content and grading zone of FA are 1.0% and zone III respectively. Assume suitable data if found necessary	L4	CO5	1,6
15	a)	Design a concrete mix for the following requirements using IS method. Also find the mix proportions by weight and by volume. M40 grade , OPC cement, sp gravity – 3.15, bulk density – 1440kg/m3, sand – grading zone I , sp gravity – 2.65, bulk density – 1610kg/m3 Coarse aggregate – 10mm angular, sp gravity 2.66, bulk density – 1580kg/m3 Degree of workability – 0.85 compacting factor, quality control – very good	L4	CO5	1,7
16	a)	What special features are to be considered while handling and placing ready mixed concrete.	L1 L2	CO5	1,6

*__Blooms Taxonomy Level (BT)__ (L1–Remembering; L2–Understanding; L3–Applying; L4 – Analyzing; L5 – Evaluating; L6 – Creating)

Course Outcomes (CO)

Program Outcomes (PO)

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