Code: 20A01403T

R20

B.Tech II Year II Semester (R20) Regular & Supplementary Examinations August/September 2023

CONCRETE TECHNOLOGY

(Civil Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a)	Write about the deleterious substance in aggregate.	2M
(b)	Write about the importance of soundness test in cement.	2M
(c)	Define is workability.	2M
(d)	Write the tests to be conducted for workability of concrete.	2M
(e)	Write briefly about self-curing of concrete.	2M
(f)	Write the effects of improper curing.	2M
(g)	Write on proportioning of concrete mixes.	2M
(h)	Write about water cement ratio.	2M
(i)	Write disadvantages with heavy weight aggregates.	2M
(j)	Write any four types of fibres and its properties.	2M

PART – B

(Answer all the questions: 05 X 10 = 50 Marks)

2 Explain in detail about any two laboratory tests to be conducted in cement. 10M

OR

3 (a) Explain the classification of aggregates based on size and texture of the aggregates. 5M

(b) Explain the IS specifications to be followed in quality of mixing water. 5M

4 Explain procedure for determination of workability of concrete using Slump cone test with neat diagram. 10M

OR

5 Explain in detail about the Rebound Hammer Test (NDT) with neat sketch. 10M

6 (a) Describe the test for measurement of drying shrinkage of concrete. 6M

(b) Explain the factors affecting the shrinkage of concrete. 4M

OR

7 (a) How does strength of concrete influence the modulus of elasticity and Poisson's ratio of concrete? 6M

(b) Explain about various types of shrinkage. 4M

8 Design a concrete mix for M45 grade of concrete with the following data. 10M

Type of cement	OPC 43 grade
Maximum size of aggregate	20 mm
Workability	125 mm slump
Method of placing	Pumping
Type of aggregate	Crushed angular
Specific gravity of fine aggregate	2.7
Specific gravity of coarse aggregate	2.8
Water absorption for fine aggregate	0.5 percent
Water absorption for coarse aggregate	1.0 percent

Grading of coarse aggregate confirming to grading zone-II, and super plasticizer used.

OR

9 Summarize the step-by-step procedure followed to obtain mix proportion of high strength concrete.

10 Explain about high density concrete its applications merits and demerits. 10M

OR

11 Discuss about the fiber reinforced concrete and it applications and limitations. 10M

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Code: 20A01403T

R20

B.Tech II Year II Semester (R20) Regular & Supplementary Examinations April/May 2024

CONCRETE TECHNOLOGY

(Civil Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1		Answer the following: (10 X 02 = 20 Marks)	
	(a)	What do you understand by the term grading of Aggregates?	2M
	(b)	Name any two chemical admixtures and explain their significance.	2M
	(c)	What is meant by Slump?	2M
	(d)	Define segregation and bleeding.	2M
	(e)	Mention the importance of curing.	2M
	(f)	List out the factors which influencing shrinkage of Concrete.	2M
	(g)	What is meant by gap grading of aggregate?	2M
	(h)	What is meant by high performance concrete?	2M
	(i)	List out the advantages of fiber reinforced concrete.	2M
	(j)	What is meant by self compacting concrete?	2M

PART – B

(Answer all the questions: 05 X 10 = 50 Marks)

2	Explain in detail about the various types of tests performed to assess the properties of cement.	10M
	OR	
3	Discuss in detail about the various types of admixtures used in concrete.	10M
4	Explain in detail about any three methods adopted to measure the workability of concrete.	10M
	OR	
5	With neat sketch, explain in detail the procedure adopted to measure the compressive, flexural and tensile strength of concrete.	10M
6	Discuss in detail about the various types of shrinkage in concrete and explain the factors which influences it.	10M
	OR	
7	Explain the causes of creep in concrete and elaborate the factor which influences its variation.	10M
8	Explain in detail the step by step procedure adopted to design the concrete mix as per IS method.	10M
	OR	
9	Design a concrete mix by IS method for the following requirements:	10M

Characteristic compressive strength at 28 days	25 N/mm^2
Maximum nominal size of aggregate	20 mm
Shape of aggregate	angular
Degree of workability, slump of concrete	50 mm
Type of Exposure	Mild

Test data for making concrete making materials

Specific gravity: Cement = 3.15, Coarse aggregate = 2.7 and Fine aggregate = 2.6.

Water absorption: coarse aggregate = 0.5%, Fine aggregate = 1%

10	Explain in detail about: (i) High Density Concrete, (ii) Fiber Reinforced Concrete.	10M
	OR	
11	Explain in detail about: (i) Polymer Concrete, (ii) Self Compacting Concrete.	10M

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