Code No: 135AD **R16**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, July/August - 2023

CONCRETE TECHNOLOGY

(Civil Engineering)

Time: 3 Hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.
iv) No code book or data sheet is allowed.

PART – A

(25 Marks)

1.a)	How is fineness of cement measured?	[2]
b)	What are the different physical tests of cement?	[3]
c)	What is gap grading of aggregates?	[2]
d)	What is maximum size of aggregate used in concrete?	[3]
e)	What are advantages of low w/c ratio in concrete?	[2]
f)	What is revibration? What are advantages of revibration?	[3]
g)	What is creep? List various factors affecting creep.	[2]
h)	Write about Abram's law and Gel space ratio.	[3]
i)	List different types of fibers used in FRC.	[2]
j)	Write about no-fines concrete.	[3]

PART – B

(50 Marks)

2. Explain dry process of manufacturing the cement with neat diagram. Explain advantages over the wet process. [10]

OR

3.a) What are main compounds of cement? Explain the hydration of main compounds of cement.
b) Write short notes on: i) accelerators ii) silica fume. [4+6]

4.a) What are impurities or deleterious substances in aggregate and their effects?
b) Discuss about thermal properties of aggregates. [5+5]

OR

5.a) Write short notes on soundness of aggregates.
b) Explain briefly how the aggregates are classified based on different properties of aggregate. [5+5]

6.a) Write in detail about segregation and bleeding of concrete.

b) List various methods of curing and explain about water curing and high pressure steam curing. [5+5]

OR

7.a) What are the factors affecting workability?

b) Write about ready mixed concrete. [5+5]

8.a) What are the factors affecting the strength of concrete?

b) Discuss how rebound hammer is used to determine the strength of concrete and its working principle? [4+6]

OR

9.a) Explain relation between Modulus of elasticity and strength.

b) What are the advantages of NDT over destructive tests? [5+5]

10. Design a concrete mix of M25 grade for a roof slab. Take a Standard deviation of 4MPa. The specific gravities of Coarse Aggregate and Fine Aggregate are 2.75 and 2.58 respectively. The bulk density of coarse aggregate is 1630kg/m^3 and fineness modulus of fine aggregate is 2.78. A slump of 60mm is necessary. The water absorption of coarse aggregate is 1% and free moisture in fine aggregate is 2%. Design the concrete mix using IS code method. Assume any missing data suitably. [10]

OR

11.a) What is FRC? What are the factors affecting the properties of FRC?

b) Write short notes on SIFCON. [5+5]

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