

R18

Code No: 155AQ

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]

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- 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]

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- 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]

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- 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]

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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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