

R18

Code No: 155AQ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, January - 2025

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) What is soundness of cement? [2]
- b) What are the approximate oxide compositions of OPC? [3]
- c) Define fineness modulus. [2]
- d) Distinguish fine aggregate and coarse aggregate. [3]
- e) Mention the factors affecting the workability of concrete. [2]
- f) Define Setting times of concrete. [3]
- g) Why curing is necessary for concrete? [2]
- h) What is meant by 'High performance concrete'? [3]
- i) What is No-fines concrete? [2]
- j) Mention the applications of Fibre reinforced concrete. [3]

PART – B

(50 Marks)

- 2.a) Discuss about the raw materials for OPC and explain about their functions in the properties of cement.
 - b) Discuss about the soundness and compressive strength tests on cement. [5+5]
- OR**
- 3.a) Discuss about the role of various compounds of cement and its hydrated products on the properties of cement.
 - b) Discuss about the use of GGBS and silica fume in concrete and their effects. [5+5]
- 4.a) State the requirements of physical and mechanical properties of coarse aggregate for making concrete.
 - b) What is Alkali aggregate reaction and mention its affects on concrete structures? [6+4]
- OR**
- 5.a) What is bulking of aggregates? Explain how bulking of aggregates verified and mention its importance.
 - b) What is grading of aggregates and discuss about the sieve analysis of coarse aggregate? [5+5]

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- 6.a) Discuss about the slump test for measuring the workability of fresh concrete.
b) What is workability and discuss about factors affecting workability of fresh concrete mix? [5+5]

OR

- 7.a) Define segregation and bleeding of concrete, discuss how to avoid them.
b) Explain effect of time and temperature on workability of concrete. [5+5]

- 8.a) Explain about rebound hammer test on concrete.
b) Discuss about the effects of creep and shrinkage on the concrete. [4+6]

OR

- 9.a) Explain how tensile strength of concrete is measured.
b) Explain about factors affecting the strength of concrete. [5+5]

10. Design a M30 concrete using IS 10262 for the following data. Standard deviation = 6, Maximum size of aggregate = 20 mm (angular), Type of exposure – Moderate, Specific gravity of Cement, FA and CA = 3.10, 2.6 and 2.67, respectively. Zone of sand = Zone II, Water absorption of CA, FA = 0.8%, 1.0%, Free moisture on CA, FA = 0.2%, 1.0%. [10]

OR

- 11.a) Discuss about any two durability tests on concrete.
b) What is polymer concrete and discuss how to develop polymer concrete? [5+5]

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