R18

Code No: 155AQ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, March - 2024

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.

PART – A

(25 Marks)

1.a)	What is initial setting time of cement?	[2]
b)	What are the applications of mineral admixtures in concretes?	[3]
c)	What are the different tests carried out on the aggregates?	[2]
d)	Define fine aggregate and coarse aggregate.	[3]
e)	Mention the factors affecting the workability of concrete.	[2]
f)	Define segregation and bleeding.	[3]
g)	List the factors affecting the compressive strength of concrete.	[2]
h)	Define shrinkage and creep of concrete.	[3]
i)	What is Polymer concrete?	[2]
j)	Mention the factors in the choice of mix proportions of concrete.	[3]

PART – B

(50 Marks)

2.a) Explain about Rapid Hardening Cement, Portland Pozzolana Cement and Sulphate Resisting Cement and their relative advantages compared to OPC.

b) Explain about the soundness test on cement. [6+4]

OR

3.a) Discuss about the role of various compounds of cement and its hydrated products on the properties of cement

b) Write about the use following chemical admixtures in the concrete i) Air entraining admixtures ii) Accelerating admixtures iii) Water reducing admixtures. [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) Write about the tests to determine specific gravity and bulk density of coarse aggregates.

b) Discuss about the importance of gradation of aggregates. [5+5]

6.a) Explain about the slump test and Vee-bee test for measuring the workability of fresh concrete.

b) Discuss about the factors affecting workability of fresh concrete mix. [5+5]

OR

7. Explain about the mixing and vibration of concrete. [10]

8.a) Write briefly about any two NDT Methods on concrete.

b) Explain about the Maturity of concrete. [5+5]

OR

9.a) Discuss about the effects of creep and shrinkage on the concrete.

b) Explain about the Flexure strength test and Split tensile strength test on concrete. [5+5]

10. Design a M40 concrete using IS 10262 for the following data. Maximum size of aggregate = 20 mm (angular, IS 383), Compacting factor 0.93, Type of exposure – Moderate, Specific gravity of Cement, FA, CA = 3.15, 2.6, 2.7, Zone of sand = Zone III, Water absorption of CA, FA = 0.6%, 1.2%, Free moisture on CA, FA = 0.1%, 2.0%. [10]

OR

11.a) Discuss about strength and durability of light weight concrete and its applications.

b) Discuss how to develop polymer concrete. [6+4]

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