

4E2033

Roll No. _____

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B. Tech. IV Sem. (Back) Exam., June/July-2014

Civil Engineering

4CE2 Concrete & Construction Technology

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks: 24

Instructions to Candidates:-

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination.

(Mentioned in form No.205)

1. _____ IS383

2. _____ IS10262

UNIT-I

- Q.1 (a) Describe the term 'Grade' of Concrete. [2]
- (b) Design a Concrete mix of M30 Grade with the following data: maximum size of aggregate 20mm, fine aggregate conforming to Zone II of IS383, Cement – 43Grade OPC, Slump required = 40mm, Quality control – Good, standard deviation value may be assumed as 4.5 N/mm^2 to arrive at the target strength, specific gravities of cement, fine aggregate and coarse aggregate are 3.15, 2.65 and 2.80 respectively. Water absorption values for the fine and coarse aggregate may be taken as 1.0% and 1.20% respectively. Water content value for 20 mm

MSA concrete required is 186 kg/m^3 . Air content may be assumed as 1%. Any other data required may be assumed suitably and stated. Coarse aggregate contains two fractions: 20 mm size is passing 89% from 20 mm sieve and is 10% passing through 10 mm sieve. The 10 mm fraction is passing 100% from the 20 mm sieve and 70% from the 10mm sieve. Use appropriate blending to result in grading as per the norms for the concert mix. rtuonline.com [14]

OR

Q.1 Discuss following properties of concrete and factors affecting these properties - [4x4=16]

- (a) Permeability
- (b) Workability
- (c) Compressive strength
- (d) Flowability

UNITY-II

- Q.2 (a) Discuss various methods of transportation of concrete and applicability along with suitability for each. [8]
- (b) Discuss the role of fly ash in concrete. [4]
- (c) Discuss properties of high Strength concrete and application. [4]

OR

- Q.2 (a) Discuss batching of concrete in a batching plant and the related issues. [4]
- (b) Discuss different curing methods of concrete, applicability and suitability of each. [6]
- (c) Discuss properties of silica fume, its effect, and use in concrete [6]

UNIT-III

- Q.3 (a) Explain DPC treatment in buildings with sketches. [8]
(b) Describe methods and materials for anti termite treatment. [8]

OR

- Q.3 (a) Describe the method for centering and shuttering for columns, loads on the formwork of columns and the general associated related practices [12]
(b) Discuss issues for earthwork in dry and loose soil. [4]

UNIT-IV

- Q.4 (a) Discuss requirements of a good staircase. [4]
(b) Describe various types of arches and their construction details with figures. [12]

OR

- Q.4 (a) Discuss advantages and disadvantages of prefabrication and its use in construction. [6]
(b) Discuss - [8]
(i) lift slab system
(ii) Concrete skeleton system both with figures
(c) Discuss requirement of a construction joint in brief. [2]

UNIT-V

- Q.5 (a) Describe general floor components with figure and particular to a typical ground floor. [6]
- (b) Discuss selection of flooring and floor types. [6]
- (c) Describe various types of pitched roofs with figures. [4]

OR

- Q.5 (a) Explain detail of a roof truss with figures. [10]
- (b) Explain construction detail of a typical upper floor with figure. [6]
