

4E4112

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

Civil Engineering

4CE2A Concrete 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.

1. IS:10262 Code of Practice for concrete mix design 2. _____

UNIT-I

- Q.1 (a) Write the names of basic compounds of cement and their role in hydration of cement. [6]
- (b) Explain the role of water-cement ratio in concrete. [3]
- (c) Explain flowability & segregation of concrete and their methods of determination. [6]
- (d) Write the approximate value of air content in concrete made with 20 mm maximum size of aggregate. [1]

OR

- Q.1 (a) Discuss bleeding of concrete and factors affecting it. [4]
- (b) Discuss the significance of
- (i) Heat of hydration and [4]
- (ii) C-S-H gel [4]
- (c) How is workability of fresh concrete determined? Explain with figure. Also discuss factors affecting it. [8]

UNIT-II

- Q.2 (a) What is meant by creep of concrete? Discuss factors affecting it. [8]
- (b) Explain application and use of rebound hammer. [8]

OR

- Q.2 (a) What is meant by shrinkage of concrete? Discuss factors affecting it. [8]
- (b) Explain application and use of ultrasonic pulse velocity meter. [8]

UNIT-III

- Q.3 (a) Discuss various methods of placing of concrete. [2]
- (b) Discuss various methods of transportation of concrete and their suitability. [8]
- (c) Discuss various types of vibrators and their use in compaction of concrete. [6]

OR

- Q.3 (a) What do you understand by the terms: 'Immediate curing' and 'Final curing'. Explain with methods and suitability for each. [6]

- (b) What is 'Durability' of concrete? Explain the factors affecting it and means to ensure a 'durable' concrete. [10]

UNIT-IV

- Q.4 Design a M40 concrete mix with maximum size of aggregate 20mm, using IS code method. Make necessary assumptions and state them. [16]

OR

- Q.4 (a) Describe the types of super-plasticizers, their chemical composition difference and their effect in concrete. [6]
- (b) Explain the properties of flyash and their effect in concrete. [6]
- (c) Explain the role of retarders and their applicability [4]

UNIT-V

- Q.5 (a) Discuss formwork for columns. [4]
- (b) Discuss slip formwork and its application areas. [4]
- (c) Describe salient properties and application of sulphate resisting concrete. [8]

OR

- Q.5 (a) Discuss properties and application of pumpable concrete. [4]
- (b) What is self compacting concrete? Discuss its rheological properties and methods to measure the same. [12]