

27/6/2016

4E4112

Roll No. _____

Total No of Pages: **4**

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B.Tech. IV-Sem (Main & Back) Exam; June-July 2016

Civil Engineering

4CE2A Concrete Technology

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks (Main & Back): 26

Min. Passing Marks (Old Back): 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. NIL _____

2. NIL _____

UNIT-I

Q.1 (a) Discuss and compare the role of C_3S , C_2S AND C_3A in governing the various properties of cement. [8]

(b) Define workability of concrete. With the help of neat dimensional set up experiment, describe "Slump test" and its limitations. [2+4+2=8]

OR

Q.1 (a) Differentiate between the followings.

(i) Elongated and flaky aggregates

(ii) Segregation and bleeding of concrete. [2×4=8]

- (b) Describe C-S-H gel. Calculate minimum w/c ratio required for 60% hydration, so that cement gel just occupies the available space completely. [2+6=8]

UNIT-II

- Q.2 (a) With the help of neat schematic curve, describe the creep phenomena and its recovery. Also discuss the factor affecting the creep of concrete. [8]
- (b) Describe the principle and method of Rebound Hammer NDT and its limitations. [8]

OR

- Q.2 (a) Describe the maturity concept of concrete and its significance. A concrete having full maturity strength of 325kg/cm^2 is used in cold zone at 5°C temperature. Using Plawman's equation estimate its strength after 15 days. Use coefficient $A = 21$ and $B = 61$. [3+5=8]
- (b) List the type of shrinkage of concrete. Describe the plastic shrinkage and discuss the preventive measures to reduce the plastic shrinkage. [2+3+3=8]

UNIT-III

- Q.3 (a) Differentiate between weigh batching and volume batching. With the help of schematic line diagram explain the batching through "Automatic batching plant". [4+4=8]
- (b) Brief describe the following method of compaction of concrete.
- (i) Rodding
 - (ii) Ramming
 - (iii) Tamping.
 - (iv) Compaction through surface vibrators. [2×4=8]

OR

- Q.3 (a) (i) Describe the necessity and important of curing.
(ii) How does the curing temperature affect the strength of concrete?
(iii) Describe the steam curing in detail. [3+3+4=10]
- (b) Describe the various steps of mixing of concrete using tilted concrete mixer. Also describe the term "buttering of mixer". [4+2=6]

UNIT-IV

- Q.4 (a) Describe the accelerator admixtures, specifically on the following points:
(i) Purpose & specific situation when these are to be used.
(ii) Example of commonly used accelerators.
(iii) Their effect on strength of concrete. [4+2+2]
- (b) Discuss the use of fly ash and silica fume as admixture in concrete. [8]

OR

- Q.4 (a) Describe the terms "target mean strength" and "characteristics strength of concrete". Give the equation for finding quantity of coarse aggregate in mix design by I.S. method, explain each and every term involved in the equation. [3+4=7]
- (b) Different between the following:
(i) Retarder and accelerator admixture.
(ii) Chemical and mineral admixture.
(iii) Plasticizers and super plasticizers. [3×3=9]

UNIT-V

Q.5 Write short note on the followings:

- (a) High strength concrete
- (b) Under water concreting
- (c) Self compacting concrete
- (d) Slip Form Work

[4×4=16]

OR

- Q.5 (a) Describe the requirement of a good formwork. [6]
- (b) Describe the salient properties and application of sulphate resisting concrete. [5]
- (c) Draw a typical neat-labeled sketch of formwork for R.C.C. beam-slab. [5]
