

**4E2033**

Roll No. : \_\_\_\_\_

Total Printed Pages : **4****4E2033**

B. Tech. (Sem. IV) (Main&amp;Back) Examination, June/July - 2011

Civil Engg.

4CE2 Concrete &amp; Construction Technology

Time : 3 Hours]

[Total Marks : 80

[Min. Passing Marks : 24

*Attempt any five questions, selecting one question from each unit.  
All questions carry equal marks.*

Use of following supporting material is permitted during examination.

*(Mentioned in form No. 205)*

1. \_\_\_\_\_ IS : 10262

2. \_\_\_\_\_ IS : 456

**UNIT - I**

1. (a) Discuss 'permeability' of concrete and factors influencing it. 6
- (b) Describe standard test procedure as per the IS code for compressive strength test of hardened concrete. How is the size of specimen related with maximum size of aggregate in concrete ? 6
- (c) Discuss in brief method to determine air content of concrete and factor affecting it. 4

**OR**

1. Design concrete mix of M40 grade with IS method. Given : Cement of 43 Grade OPC with 28 days compressive strength equal to  $46\text{N/mm}^2$ , aggressive exposure condition for concrete, aggregate 40mm nominal size, good quality control at site to produce concrete of 0-25 mm slump; river sand of zone I, available coarse aggregates with following three partize size fractions (Sieve analysis results) :

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1

[Contd...

### Coarse aggregates

Sieve size % passing	I	II	III
40 mm	60	100	100
20 mm	03	70	95
10 mm	—	10	55

Water absorption value for all the three types of coarse aggregates and the river sand is equal to 0.70%. Free moisture in all the aggregates can be assumed to be equal to 0.1%. Determine the final quantities required per cubic meter of concrete of cement, sand, three types of coarse aggregates (individually) and water in incorporating due correction as per the IS code.

16

## UNIT - II

- 2 (a) Discuss appropriate curing methods and duration for the cases mentioned below, if more than one method is to be employed for one case, discuss duration of each.
- (i) Concrete pavement with pavement quality concrete of Grade M45 and pavement is four lane with divider. 4
  - (ii) Columns (with M30) in ambient temperature of  $46^{\circ}\text{C}$  and  $30^{\circ}\text{C}$  with relative humidity of 25% and 80% respectively. 2
- (b) Discuss appropriate concrete compaction method for the two cases mentioned in Q. 2 (a) 2
- (c) Discuss appropriate admixtures in concrete for pumpable concrete to be placed 50 m high and 40 m horizontal boom length. The concrete is to be pre mixed and transported with required slump of 100-120 mm after 60 minutes of its production at the batching plant. 2
- (d) Discuss typical applications of M50, M60, M75 Grades of concrete. 3
- (e) Which are the different types of accelerators; Write advantages and limitations of each and typical dosages in concrete. 3



- (f) Write typical value of possible range of reduction in water content of concrete with use of
- Water reducing agents
  - Super - plasticizers
- 2

OR

- 2 (a) Describe advantages of use of flyash in concrete and precautions while its use in concrete. 4
- (b) What are the difference in physical and chemical properties of flyash and silicafume. 6
- (c) Write typical mix constituents for production of M70 Grade concrete limiting cement content per cubic metre of concrete equal to  $450 \text{ kg/m}^3$ . Typical dosages of admixtures need specifically be mentioned. 4
- (d) Compare interrelation between different salient properties of high strength concrete, with that in ordinary strength concrete. 2

### UNIT - III

- 3 (a) Write typical recommended formwork sizes for the concrete slab 300mm thick for application as defined in Q.2(a)(i) and concrete column of size  $300 \times 450 \text{ mm}$  for application as defined in Q.2(a)(ii). 2
- (b) For which applications, slip and moving formwork is recommended? 2
- (c) Discuss different methods and their suitability for earthwork in different types of soils. 6
- (d) Describe methods of 'marking' the foundation plan and associated issues. 6

OR

- 3 (a) Discuss causes of dampness in buildings. 4
- (b) Describe effects of dampness in buildings. 4
- (c) Describe methods and materials for anti termite treatment in buildings in detail. 8



## UNIT - IV

- 4 (a) Describe construction details with nomenclature of materials used in different types of joints. 8
- (b) Describe requirements of good staircase and suitability of different types of stairs for different types of buildings. Explain with figures. 8

OR

- 4 (a) Show different shapes of arches through figures and write about their construction details. 6
- (b) Discuss components of lifts; explain with help of figures. 6
- (c) Explain the construction system of multi storeyed building frames and concrete skeleton system. 4

## UNIT - V

- 5 (a) Discuss the construction of sub base and base for ground floors. 4
- (b) Discuss construction details of terrazo flooring including curing, grinding and finishing. 8
- (c) Explain king post roof truss construction details with figure. 4

OR

- 5 (a) Describe the method of laying AC sheet on a steel truss with purlins. Sketch the details of fixing AC sheets to any rolled steel section (as purlin). 6
- (b) For a multistorey apartment building, light weight floors need to be adopted. What type of floors would you suggest? Sketch the arrangement of such floors. What special features are to be provided at the four edges of such floors, if any? 6
- (c) Explain the method of laying Mangalore tiles on a pitched roof? 4



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Roll No. \_\_\_\_\_

[Total No. of Pages : 2]

**4E 2033****B. Tech. IV Semester (Main/Back) Examination 2012****Civil Engineering****4CE2 Concrete and 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 may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)*

**Unit - I**

1. a) Describe Creep of concrete and its recovery. Also discuss the factors influencing the creep. (6)
- b) Describe the "gel-space ratio" and its use in estimating the theoretical strength of concrete. (6)
- c) Give short note on Alkali-aggregate reaction. (4)

**OR**

1. a) Describe the shrinkage of concrete and factors influencing the shrinkage. Also discuss its preventive measures. (8)
- b) A concrete has fully matured strength of  $345 \text{ Kg/cm}^2$ . If the same concrete is cured at  $10^\circ\text{C}$  throughout days & nights, then ascertain whether the form-work of such concrete can be safely removed after 15 days. Take stripping stress =  $245 \text{ kg/cm}^2$  and coefficients for Plowman's equation are as :  $A=21$  and  $B=61$ . (8)

**Unit - II**

2. a) Write short notes on any two of the following: (2x5)
  - i) Automatic batching plant
  - ii) Curing compounds
  - iii) High strength Concrete
- b) Describe the purpose of curing and discuss "Steam curing" in detail. (6)

**OR**

2. a) Differentiate between volume batching and weigh batching and their relative merits. (5)

- b) Differentiate between Retarder and Accelerator admixtures and write their applications. Describe Air-entraining admixture in detail. (6)
- c) Discuss the advantages of using silica fumes in concrete. (5)

**Unit - III**

3. a) Describe the requirements of good form work. Draw the neat labelled sketch of form work for "beam-slab" construction. (8)
- b) Describe the causes of dampness in a building. With the help of neat sketch describe the damp proofing of basement. (8)

**OR**

3. a) Differentiate between scaffolding & shoring. With the help of neat sketch describe the "underpinning" in detail. (6)
- b) Write short note on **any two** of the following:
- i) Sequence of construction activity.
  - ii) Anti-termite treatment.
  - iii) Setting out and marking of foundation plan. (2x5)

**Unit - IV**

4. a) Differentiate between any **two** of the following (2x5)
- i) Construction joint and expansion joint & their application.
  - ii) Structural behaviour of Arches & lintel & their relative merits.
  - iii) Precast & Cast insitu construction and their relative merits.
- b) Describe the requirements of a good stair-case. (6)

**OR**

4. a) Draw a neat labelled sketch of the semi-circular masonry arch. (8)
- b) Describe the types of stair-case and their suitability. (8)

**Unit - V**

5. a) Describe the factors to be considered in the selection of type of construction for upper floor in a building. (8)
- b) Draw the neat line diagram showing atleast 4 types of pitched roof. Also labelled these sketches. (8)

**OR**

5. a) Describe the constructional details of brick-jack arch floor. Give the neat labelled sketch. (5)
- b) Discuss the application of Linoleum flooring and its merits & demerits. (5)
- c) Name the types of roof covering for pitched roof. Describe any one of them with the help of neat sketch. (6)

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Total Printed Pages : **3****4E2033**

**B. Tech. (Sem. IV) (Main / Back) Examination, June/July - 2013**  
**Civil Engineering**  
**4CE2 Concrete & Construction Technology**

Time : 3 Hours]

[Total Marks : 80

[Min. Passing Marks : 24

*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**

1 Differentiate between the following :

- (i) Characteristic strength and target mean strength of concrete.
- (ii) Entrapped air and entrained air in concrete.
- (iii) Segregation and bleeding of concrete.
- (iv) Plastic Shrinkage and drying shrinkage of concrete.

4×4

**OR**

1 (a) Describe Abraham's water cement ratio law and discuss its limitations.

5

(b) Define workability of concrete mix. Describe compaction factor method of determining workability in detail. Also give the neat dimensional sketch of experimental setup.

7

(c) Give the various methods for preventing plastic shrinkage of concrete.

4



## UNIT - II

- 2 Differentiate between the following :
- Weigh batching and volume batching.
  - Retarder and Accelerator admixtures.
  - Tamping and Rodding methods of compaction.
  - Charging and Buttering the concrete mixer.

4×4

OR

- 2 Write short notes on the following :
- Bulking of sand and bulking phenomena.
  - Steam curing of concrete and its advantages.
  - High strength concrete and its uses.
  - Air entraining admixtures.

4×4

## UNIT - III

- 3 (a) With the help of neat sketches describe the following :
- Slip form work.
  - Underpinning.
- (b) Describe the method of setting out of foundation. (i.e. ground tracing)

2×5

6

OR

- 3 (a) Differentiate between 'Shoring' and 'Scaffolding'.
- (b) Give the neat labelled sketch of 'Flying shore'.
- (c) Describe the sources of dampness in building and describe the various methods of preventing dampness.

4

4

8

## UNIT - IV

- 4 (a) Describe the requirement of a good stair-case.

6





- (b) Give a typical labelled sketch of a semi-circular masonry arch. 5
- (c) Give the relative advantages and disadvantages of pre-cast construction. 5

OR

- 4 (a) Give a neat typical labelled sketch of a stair flight. 6
- (b) Differentiate the structural behaviour of Arches and Lintels. Describe the various types of lintels. 5
- (c) With the help of neat sketch describe the expansion joint and its purpose. 5

UNIT - V

- 5 (a) Describe the various factors considered in selection of type of flooring for ground floors. 8
- (b) Give a typical neat sketch of a King Post roof truss indicating each and every element of truss. 8

OR

- 5 (a) Give the advantages and disadvantages of using Flat roofs as compared to pitched roofs. 6
- (b) Name the various types of roof covering used for pitched roofs. With the help of neat sketch explain any one of the roof covering. Also, describe the various factors to be considered in selection of type of roof-covering. 10



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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<sup>2</sup> 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  $186 \text{ kg/m}^3$ . 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.

[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

## **UNIT-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]

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### 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 contrition detail of a typical upper floor with figure. [6]

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**B.Tech. IV Semester(Main/Back) Examination June/July - 2015**

**Civil Engineering**

**4CE2A Concrete Technology**

**Time : 3 Hours**

**Maximum Marks : 80**

**Min. Passing Marks : 26**

**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**

**Unit - I**

1. a) Discuss physical properties of aggregates to be used in cement concrete. (6)
- b) Enumerate basic compounds of cement and discuss their hydration rate and resulting compounds of hydration. (8)
- c) Discuss get - space ratio. (2)

**OR**

1. a) Discuss role of water-cement ratio. (4)
- b) Describe methods of determination (with help of figures) for
  - i) Workability
  - ii) Flowability of concrete (4×2)
- c) Discuss C-S-H gel, and its significance. (4)

## Unit - II

2. a) Write and explain factors affecting compressive strength of concrete. (6)  
b) What do you understand by creep of concrete. Explain the factors affecting it. (8)  
c) Explain the application of rebound hammer. (2)

OR

2. a) Explain application and use of ultrasonic pulse velocity meter with help of figures. (8)  
b) Explain the use of 'core sampling'. (4)  
c) Explain characteristics of 'aggregate-cement interface'. (4)

## Unit - III

3. a) Explain various methods of placing and transportation of concrete and their suitability. (8)  
b) Describe equipments and Methods of compaction of concrete. (6)  
c) Enumerate any four factors affecting durability of concrete. (2)

OR

3. a) Describe various methods and their suitability for curing of concrete. (8)  
b) Describe various types of concrete mixers and their suitability. (8)

## Unit - IV

4. a) Discuss quality control measures for concrete. (4)  
b) Design a concrete mix of grade M25 by I.S. method, using ordinary portland cement of 43 Grade fine aggregate conforming to Zone II, assuming quality control as good. Take specific gravities of fine aggregate and coarse aggregates 3.15, 2.85 and 2.60 respectively. Use maximum size of aggregates as 20mm. (12)

OR

4. a) Explain the types and uses of water reducing and superplasticising admixtures for concrete. (4)  
b) Explain the use of accelerators, and retarders. (4)  
c) Explain the properties and use of flyash and silica fume (separately) in concrete. (8)

**Unit - V**

5. a) Describe typical formworks for columns and beams. Through figures. (8)  
b) Describe salient features of under water concreting through figures. (6)  
c) Enumerate salient features of sulfate resisting concrete. (2)

**OR**

5. a) Discuss self compacting concrete, its salient properties and applications. (8)  
b) Discuss salient properties of high strength concrete and its applications. (4)  
c) Discuss about slip and moving form work (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]

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- (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  $325\text{kg/cm}^2$  is used in cold zone at  $5^\circ\text{C}$  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]

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	<b>4E4112</b> <b>B.Tech. IV semester (Main &amp; Back) Examination May - 2018</b> <b>Civil Engineering</b> <b>4CE2A Concrete Technology</b>	

**Time : 3 Hours**

**Maximum Marks : 80**  
**Min. Passing Marks : 26**

**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. IS 10262

**Unit - I**

1. a) Discuss gel - space ratio. (2)  
b) Write basic compounds of cement with their approximate oxide composition limits and discuss the Heat of Hydration. (6)  
c) Explain methods for determination of moisture content of aggregate. (8)

**OR**

1. a) Discuss the role of water - cement ratio. (4)  
b) Discuss the significance of calcium silicate Hydrates. (4)  
c) Describe methods of determination (with help of sketch) of work ability. (8)

**Unit - II**

2. a) What is meant by creep of concrete? Discuss factors affecting it. (8)  
b) Explain characteristics of aggregate cement inter face. (4)  
c) Explain the application of rebound hammer. (4)

**OR**

2. a) What is meant by shrinkage of concrete? Discuss factor affecting it. (6)  
b) Explain application and use of ultrasonic pulse velocity meter with help of figuoe. (6)

- c) What is the principle of half cell potential meter. (4)

**Unit - III**

3. a) Describe various methods and their suitability for curing of concrete. (8)  
b) Describe various types of concrete mix and their suitability. (8)

**OR**

3. a) Differentiate between the following  
i) Weigh batching and volume batching  
ii) Tamping and Rodding method of compaction. (8)  
b) Discuss briefly  
i) Method of compaction  
ii) Importance of curing for concrete (8)

**Unit - IV**

4. a) Explain the types and uses of water reducing and super plasticising admixtures for concrete. (8)  
b) Write short notes on (Any two)  
i) Flyash and their effect in concrete  
ii) Use of silica fume in concrete.  
iii) Air entraining agents (2×4=8)

**OR**

4. a) Discuss the role of accelerators. Why chloride free accelerators are to be preferred. (6)  
b) Explain the role of retarders. (6)  
c) Discuss the advantages of using silica fume in concrete. (4)

**Unit - V**

5. a) Discuss self compacting concrete, its salient properties and applications. (8)  
b) Discuss slip form work and its application areas. (8)

**OR**

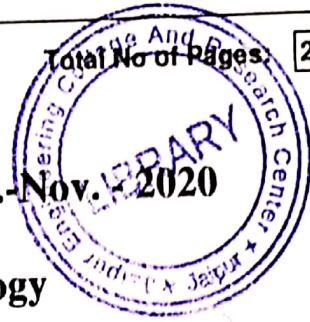
- a) What do you understand by high performance concrete? (4)  
b) Draw the neat labelled sketch of formwork for 'beam -slab' construction. (6)  
c) Describe the salient properties of sulphate resisting concrete. (6)

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Roll No. \_\_\_\_\_

4E4112

B. Tech. IV-Sem. (Back) Exam., Oct.-Nov. - 2020

Civil Engineering  
4CE2A Concrete Technology

Time: 2 Hours

Maximum Marks: 48  
Min. Passing Marks: 16*Instructions to Candidates:*

Attempt three questions, selecting from any three 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. NIL2. NIL**UNIT- I**

- Q.1 (a) Discuss the phenomena of hydration of cement. How is the water-cement ratio related to cement paste structure? What are the major Bogue's compounds of cement? Discuss their role in hydration of cement. [8]
- (b) What is grading of aggregate and its significance? Describe the terms segregation, bleeding and workability of concrete. [8]

**UNIT- II**

- Q.2 (a) What do you understand by creep of concrete? Describe different tests on fresh concrete. [8]
- (b) What do you understand by NDT? Explain application and use of rebound hammer and ultra-sonic pulse velocity meter. [8]

### UNIT- III

Q.3 Describe the following:

- (a) Transportation of concrete
- (b) Compaction of concrete
- (c) Curing of concrete
- (d) Durability of concrete

[4]

[4]

[4]

[4]

### UNIT- IV

Q.4 (a) Write down the steps of concrete mix design.

[8]

(b) Discuss the use of fly ash and silica fume in concrete.

[8]

### UNIT- V

Q.5 (a) What are the different requirements of form work and their types?

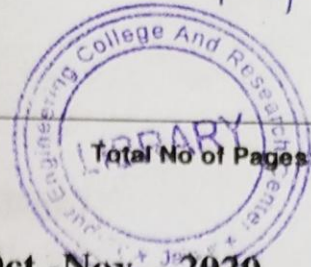
[8]

(b) Discuss the properties and applications of self-compacting concrete and pumpable concrete.

[8]



P-1



4E1211

Roll No. \_\_\_\_\_

Total No of Pages: 2

4E1211

B. Tech. IV-Sem. (Back) Exam., Oct.-Nov. - 2020  
Civil Engineering  
4CE4 – 08 Concrete Technology

Time: 2 Hours

Maximum Marks: 82  
Min. Passing Marks: 29

Instructions to Candidates:

*Attempt all ten questions from Part A, four questions out of seven questions from Part B and two questions out of five from Part C.*

*Schematic diagrams must be shown wherever necessary. Any data you feel missing may 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

### **PART – A**

**(Answer should be given up to 25 words only)**

**[10×2=20]**

**All questions are compulsory**

- Q.1 State briefly the essential requirement of form work.
- Q.2 Explain the use of accelerators and retarders.
- Q.3 Define workability.
- Q.4 Explain the use of “core-sampling.”
- Q.5 Enumerate factors affecting durability of concrete.
- Q.6 What do you understand by “Gel- Space Ratio”?
- Q.7 Describe the necessity and importance of curing.
- Q.8 Explain the term “Super plasticizers”.
- Q.9 Define Mix Design.
- Q.10 Enumerate salient features of sulphate resisting concrete.

## **PART – B**

**(Analytical/Problem solving questions)**

[4×8=32]

**Attempt any four questions**

- Q.1 Explain application and use of ultrasonic pulse velocity meter with the help of figures.
- Q.2 What do you understand by creep of concrete? Explain the factors affecting it.
- Q.3 Describe C-S-H gel. Calculate minimum w/c ratio required for 60% hydration so that cement gel just occupies the available space completely.
- Q.4 Explain various methods of placing & transportation of concretes and their suitability.
- Q.5 Describe various types of concrete mixers & their suitability.
- Q.6 Describe salient points and applications of underwater concreting.
- Q.7 Explain typical formworks for columns and beams with diagrams.

## **PART – C**

**(Descriptive/Analytical/Problem Solving/Design Questions)**

[2×15=30]

**Attempt any two questions**

- Q.1 Design a concrete mix of M-25 grade by IS method with following data: specific gravities of cement fine aggregates as 3.12, 2.90 and 2.60 respectively. Water absorption values for fine and coarse aggregates as 0.80 and 0.50 percentage respectively. Full moisture as nil in both types of aggregates slump to be 100 mm. Degree of quality control good. Exposure condition moderate. Determine and list quantities of ingredients in kg/m<sup>3</sup> of concrete.
- Q.2 Differentiate b/w weigh batching and volume batching with the help of schematic line diagram. Explain the batching through “automatic batching plant”
- Q.3 Name the types of shrinkage of concrete. Describe the plastic shrinkage and discuss the preventive measures to reduce the plastic shrinkage.
- Q.4 Draw figure of formwork /shuttering for beams, walls and arches (in detail).
- Q.5 Describe the principle and method of rebound hammer NDT & its limitations.

4E4112

Total No. of Questions:

Total No. of Pages:

Roll No. \_\_\_\_\_

**B.Tech. IV-Sem (Back) April 2021**  
**Civil Engineering**  
**4CE2A Concrete Technology**  
**4E4112**

[To be converted as per scheme]

**Time: 2Hours**

**Maximum Marks: 48**

**Min Passing Marks: 15**

Attempt **three questions**, selecting **one question each** from any three **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. IS: 10262-1982

2. Nil

**UNIT -I**

Q. 1 a) Enumerate basic compounds of cement and discuss their hydration rate and resulting compounds of hydration. (8)

b) Discuss C-S-H gel, and its significance. Explain the role of water-cement ratio in concrete. (8)

OR

Q.1a) Define workability of concrete. With the help of experiment, describe Slump test and its limitations. (8)

b) Differentiate between the followings.

(i) Elongated and flaky aggregates.

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

## UNIT -II

- Q. 2 a) Write and explain factors affecting compressive strength of concrete. Explain shrinkage of concrete. (8)
- b) With the help of neat schematic curve, describe the creep phenomena and its recovery. Also discuss the factor affecting the creep of concrete. (8)

OR

- Q.2a) Describe the principle and method of Rebound Hammer NDT and its limitations. (8)
- b) Write about the use of 'core sampling'. Also explain characteristics of 'aggregate-cement interface'. (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". (8)
- b) How does the curing temperature affect the strength of concrete? Describe Steam curing in detail? (8)

OR

- Q.3a) Explain various methods of placing and transportation of concrete and their suitability. (8)
- b) Write about durability of concrete. Describe the various steps of mixing of concrete using tilted concrete mixer. Also describe the term "buttering of mixer". (8)

## UNIT -IV

- Q. 4 a) Discuss quality control measures for concrete. (4)
- b) Design a concrete mix of grade M25 by I.S. method, using ordinary Portland cement of 43 Grade fine aggregate conforming to Zone II, assuming quality control as good. Take specific gravities of fine aggregate and coarse aggregates 3.15, 2.85 and 2.60 respectively. Use maximum size of aggregates as 20mm. (12)

OR

- Q.4a) Discuss the use of fly ash and silica fume as admixture in concrete. (8)
- b) Explain the types and uses of water reducing and Superplasticising admixtures for concrete. Discuss the uses of accelerators, and retarders in concrete. (8)

#### UNIT -V

- Q. 5 a) Describe typical formworks for columns and beams through figures. (8)
- b) Discuss about slip and moving form work. Also describe the requirement of a good formwork. (8)

OR

Q.5 Write short note on the followings with their applications:

- (a) High strength concrete
- (b) Under water concreting.
- (c) Self-compacting concrete.
- (d) Pumable Concrete.

(4×4 =16)

4E1211

Roll No. \_\_\_\_\_

Total No. of Pages: **3**

**4E1211**

**B. Tech. IV - Sem. (Main / Back) Exam., March - 2021**

**HSMC Civil Engineering**

**4CE4-08 Concrete Technology**

**Time: 2 Hours**

**[To be converted as per scheme]**

**Max. Marks: 82**

**Min. Marks: 29**

*Instructions to Candidates:*

*Attempt all ten questions from Part A, four questions out of seven questions from Part B and two questions out of five from Part C.*

*Schematic diagrams must be shown wherever necessary. Any data you feel missing may 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

**PART – A**

**(Answer should be given up to 25 words only)**

**[10×2=20]**

**All questions are compulsory**

- Q.1 What is the purpose of using admixtures in concrete? [2]
- Q.2 What precautions are necessary for under-water concreting? [2]
- Q.3 Write the advantages of machine mixing over the hand mixing. [2]
- Q.4 What are the chemical constituents of ordinary Portland cement? [2]
- Q.5 What is meant by grading of aggregates? [2]

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- Q.6 Give the functions of  $C_2S$  and  $C_3A$  in cement. [2]
- Q.7 What is water-cement ratio? What is its importance in concrete strength? [2]
- Q.8 What is the difference between segregation and bleeding? [2]
- Q.9 Enumerate salient features of sulphate resisting concrete. [2]
- Q.10 Define Mix design. [2]

### **PART – B**

**(Analytical/Problem solving questions)**

**[4×8=32]**

**Attempt any four questions**

- Q.1 Describe C-S-H gel. Calculate minimum w/c ratio required for 60% hydration so that cement gel just occupies the available space completely. [8]
- Q.2 Explain how size of aggregate affects the property of concrete? [8]
- Q.3 What are the methods of compaction? Explain in detail. [8]
- Q.4 List methods of curing and explain any one method. [8]
- Q.5 Explain application and use of ultrasonic pulse velocity meter with the help of figures. [8]
- Q.6 Explain typical formworks for columns and beams with diagrams. [8]
- Q.7 State the factors to be considered while deciding upon the use of admixtures. [8]

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**[160]**

## **PART – C**

**(Descriptive/Analytical/Problem Solving/Design Questions)** [2×15=30]

**Attempt any two questions**

- Q.1 Describe the principle and method of rebound hammer & its limitations. [15]
- Q.2 Write short notes on – [15]
- (a) Fly – ash
  - (b) Metakaolin
  - (c) Water reducing admixtures
  - (d) Self compacting concrete
  - (e) Use of “Core – sampling”
- Q.3 Draw figure of formwork / shuttering for beams, walls and arches. (in detail) [15]
- Q.4 What do you mean by durability of concrete and what are the causes of deterioration, explain in detail. [15]
- Q.5 Discuss the following terms - [15]
- (a) Sieve analysis
  - (b) Fineness modulus
  - (c) Bulking of sand
-