

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2020****Subject Code:3150610****Date:27/01/2021****Subject Name:Concrete Technology****Time:10:30 AM TO 12:30 PM****Total Marks: 56****Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Briefly discuss the composition of concrete. **03**  
(b) Define workability and discuss factors affecting workability. **04**  
(c) Explain various causes of corrosion of steel in concrete and its remedial measures. **07**
- Q.2** (a) Briefly explain Alkali-aggregate reaction. **03**  
(b) Explain the compaction factor test on concrete. **04**  
(c) Classify the various types of admixtures based on their application. Explain water reducing type admixtures in detail. **07**
- Q.3** (a) Briefly discuss the need for curing and enlist various methods of concrete curing. **03**  
(b) Enlist Bouge's compounds of cement and their role in the hydration process. **04**  
(c) Enlist various factors affecting the strength of concrete and explain anyone in detail. **07**
- Q.4** (a) Differentiate between fresh concrete and hardened concrete. **03**  
(b) Define the permeability of concrete and enlist various factors affecting permeability. **04**  
(c) Explain the dry process for the manufacturing of cement. **07**
- Q.5** (a) Discuss segregation and bleeding of concrete briefly. **03**  
(b) Discuss the effect of freezing and thawing on concrete. **04**  
(c) Define nominal mix concrete and design mix concrete. Explain step by step procedure of the IS method of mix design. **07**
- Q.6** (a) Define Ferro cement briefly. **03**  
(b) Differentiate between high strength and high-performance concrete. **04**  
(c) Enlist types of fibers used in fiber reinforced concrete. Also, explain factors affecting properties of fiber-reinforced concrete. **07**
- Q.7** (a) Briefly explain Gel-space ratio. **03**  
(b) Explain the importance of the water-cement ratio on the strength of the concrete. **04**  
(c) Define creep. Explain the factors affecting the creep of concrete. **07**
- Q.8** (a) Distinguish between the grade of cement and grade of concrete. **03**  
(b) List various crack repair techniques and explain them to anyone in detail. **04**  
(c) Enlist the types of NDT tests for concrete. Explain the rebound hammer test in detail. **07**

\*\*\*\*\*

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2021****Subject Code:3150610****Date:01/01/2022****Subject Name:Concrete Technology****Time:02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		<b>MARKS</b>
<b>Q.1</b>	(a) How water cement ratio effect the strength of concrete?	<b>03</b>
	(b) Explain Qualities of water requires in concrete.	<b>04</b>
	(c) What is durability of concrete? Enlist factors affecting durability of	<b>07</b>
<b>Q.2</b>	(a) What is compaction? Why compaction is needed?	<b>03</b>
	(b) What is gap grading? explain it briefly	<b>04</b>
	(c) Explain Indian Standard Mix design method as per IS:10262:2009 with its salient features	<b>07</b>
	<b>OR</b>	
	(c) Explain different methods of curing procedure.	<b>07</b>
<b>Q.3</b>	(a) What is shrinkage? Give the classification of shrinkage.	<b>03</b>
	(b) Explain Segregations of concrete in detail.	<b>04</b>
	(c) Explain principle of mix design. Explain parameters and factors influencing mix design.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Give advantages of Quality control.	<b>03</b>
	(b) Explain Bleeding in detail.	<b>04</b>
	(c) Explain Ultrasonic pulse velocity test for hardened concrete	<b>07</b>
<b>Q.4</b>	(a) Enlist minimum six different types of cement	<b>03</b>
	(b) Explain crack repair by injection grouting	<b>04</b>
	(c) Write short note on silica fume	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) How fly ash concrete gain strength in later age? Explain Mechanism	<b>03</b>
	(b) Give the Limitation of Rebound hammer test.	<b>04</b>
	(c) Explain “Alkali Aggregate Reaction”. Explain factors promoting it	<b>07</b>
<b>Q.5</b>	(a) Explain mechanism of sulphate attack on concrete	<b>03</b>
	(b) Explain different types of slump with figure	<b>04</b>
	(c) Define workability. State different methods of it. Describe any one in detail.	<b>07</b>
	<b>OR</b>	
<b>Q.5</b>	(a) Enlist factors affecting properties of fibre reinforced concrete.	<b>03</b>
	(b) Explain the effect of cold weather on concrete.	<b>04</b>
	(c) State factors affecting compressive strength of concrete and explain any one in detail.	<b>07</b>

\*\*\*\*\*

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2021****Subject Code:3150610****Date:09/09/2021****Subject Name:Concrete Technology****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		<b>MARKS</b>
<b>Q.1</b>	(a) Write a detailed note on super plasticizer.	<b>03</b>
	(b) Enlist the major compounds of ordinary Portland cement and briefly describe their importance.	<b>04</b>
	(c) In which cases the nominal mix and design mix is used? Describe step by step procedure of concrete mix design as per IS code.	<b>07</b>
<b>Q.2</b>	(a) What are the methods of compaction of concrete?	<b>03</b>
	(b) Define Durability. Explain its significance.	<b>04</b>
	(c) What is self-compacting concrete? And what are the advantages and disadvantages of using it?	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(c) What is permeability of concrete? Enlist factors affecting permeability of concrete. Explain any one in detail.	<b>07</b>
	(a) What are the effects of impurities in water on concrete?	<b>03</b>
	(b) Define the term “Bulking of aggregates”. Explain its significance with reference to concrete making. Explain the simple field test to determine the bulking of aggregates.	<b>04</b>
	(c) Describe the dry process of manufacturing of ordinary Portland cement step-wise with the help a flow chart.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Explain Segregations of concrete.	<b>03</b>
	(b) Describe the test for determining standard consistency, initial and final setting time of cement.	<b>04</b>
	(c) Define flakiness and elongation index of aggregate. Explain aggregate impact test.	<b>07</b>
<b>Q.4</b>	(a) What does strength in concrete mean? List the different types of concrete strengths.	<b>03</b>
	(b) Explain different types of slumps with sketch	<b>04</b>
	(c) Define workability of concrete. Enlist the different methods for measuring it in the laboratory? Explain any one of them.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Explain need of curing. State different methods of curing.	<b>03</b>
	(b) State the different types of special concrete techniques. Explain the ready mixed concrete with its classification.	<b>04</b>
	(c) Define Creep. Explain factors affecting creep of concrete	<b>07</b>
<b>Q.5</b>	(a) What are the essential characteristics of water that can be used for	<b>03</b>

- mixing and curing of concrete?
- (b) Explain grading of aggregate and its significance **04**
- (c) State factors affecting compressive strength of concrete and explain any one in detail. **07**

**OR**

- Q.5** (a) Define Shrinkage. Explain Plastic shrinkage **03**
- (b) Enlist the different admixtures used in concrete construction. Explain the function of any two types of admixtures. **04**
- (c) Explain the basic principle on which schmidt rebound hammer works. What are its limitations? **07**

\*\*\*\*\*

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V(NEW) EXAMINATION – SUMMER 2022****Subject Code:3150610****Date:04/06/2022****Subject Name:Concrete Technology****Time:02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

**MARKS**

- Q.1** (a) State the advantages of concrete as a construction material. **03**
- (b) Enlist Bouge's compounds of cement. Explain their role in the hydration process. **04**
- (c) Determine the Fineness Modulus for the given Sieve analysis performed on fine aggregate. Weight of F.A. retained on lower than 150 $\mu$  is 35 gm. **07**

IS Sieve size	10 mm	4.75 mm	2.63 mm	1.18 mm	600 $\mu$	300 $\mu$	150 $\mu$
Weight retained (gm)	0	10	50	50	95	175	85

- Q.2** (a) Plot the flow chart for dry and wet process of cement manufacturing. **03**
- (b) Classify the coarse aggregates based on source, shape and texture. **04**
- (c) Explain briefly Alkali-Aggregate reaction. Discuss factors promoting the Alkali-Aggregate reaction in detail. **07**

**OR**

- (c) Explain the test for the determination of aggregate crushing value. **07**

- Q.3** (a) State the methods adopted for the transportation of concrete. Explain any one method. **03**
- (b) Explain the segregation of concrete. **04**
- (c) Enlist various factors affecting workability of concrete and discuss it in detail. **07**

**OR**

- Q.3** (a) State the importance of compaction to achieve desired quality of concrete. **03**
- (b) Discuss the effect of Height/Diameter ratio on strength of concrete. **04**
- (c) Explain the test method to determine flexural strength of concrete in detail. **07**

- Q.4** (a) Define the terms. (i) Shrinkage (ii) Creep (iii) Durability **03**
- (b) Explain following factors which contributes to cracks in concrete. **04**
- (i) Plastic Shrinkage (ii) Carbonation
- (c) Briefly explain the sulphate attack on concrete. Also discuss the methods to control sulphate attack. **07**

**OR**

- Q.4** (a) State the objectives of concrete mix design. **03**

- |            |     |  |    |
|------------|-----|--|----|
|            | (b) | Define Permeability of concrete. State the factors due to which concrete will have higher permeability in actual structures. | 04 |
|            | (c) | Define nominal mix and design mix for concrete. Explain step by step procedure of the IS method of mix design.               | 07 |
| <b>Q.5</b> | (a) | State the Limitations of Rebound Hammer Test.  | 03 |
|            | (b) | Enlist methods to measure the workability of fresh concrete. Explain any one in detail.                                      | 04 |
|            | (c) | Explain the pull out test method in detail.  | 07 |
|            |     | <b>OR</b>  |    |
| <b>Q.5</b> | (a) | State the essential characteristics of water that can be used for mixing and curing of concrete.                             | 03 |
|            | (b) | Write short note on Ferro Cement.  | 04 |
|            | (c) | Discuss Fiber Reinforced Concrete in detail.   | 07 |

\*\*\*\*\*