

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.

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

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.

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

- 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 μ is 35 gm. **07**

IS Sieve size	10 mm	4.75 mm	2.63 mm	1.18 mm	600 μ	300 μ	150 μ
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**

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| | (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 |
| Q.5 | (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 |
| | | OR | |
| Q.5 | (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 |
