Code No: **RT42014C** **R13** **Set No. 1**

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2019

REPAIR AND REHABILITATION OF STRUCTURES

(Civil Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

*****

PART–A *(22 Marks)*

1. a) Explain the significance of alkali aggregate reaction. [4]
   b) Explain the importance of NDT methods. [3]
   c) Explain the equipment required for the investigation of failure of buildings. [4]
   d) Explain the procedure for the determination of depth of carbonation. [4]
   e) Explain the various precautions to be taken during repair of buildings. [4]
   f) Explain causes of distress in structures. [3]

PART–B *(3x16 = 48 Marks)*

2. a) Explain the various factors responsible for the deterioration of concrete structures. [8]
   b) Discuss the quantification and measurement of cracks in concrete structures. [8]

3. a) Explain the NDT methods to assess the quality of concrete. [8]
   b) Discuss the various methods of measurement of corrosion. [8]

4. a) Explain the different causes for failure of buildings. [8]
   b) Explain the methodology for investigation of building failures. [8]

5. a) Explain the materials used for rehabilitation of buildings. [8]
   b) Explain the behavior of concrete under corrosion of steel reinforcement. [8]

6. a) Explain the following:
      (i) Shotcrete and
      (ii) Underpinning [8]
   b) Explain the equipment used for repair of buildings. [8]

7. a) Explain the preliminary tests to identify the distress in structures. [8]
   b) Explain the procedure for rehabilitation of heritage structures. [8]

Code No: **RT42014C** **R13** **Set No. 2**

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2019

REPAIR AND REHABILITATION OF STRUCTURES

(Civil Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

****

PART–A *(22 Marks)*

1. a) List out the various types of cracks in concrete structures. [4]
   b) Explain the importance of corrosion meter. [4]
   c) Explain the various causes for failure of buildings. [4]
   d) Explain the application of Impact echo method. [3]
   e) Explain the method of jacketing for repair of building components. [4]
   f) What are the various causes for the distress in structures? [3]

PART–B *(3x16 = 48 Marks)*

2. a) Explain the mechanism of deterioration of concrete structures. [8]
   b) Explain the preventive measures to avoid cracks in concrete structures. [8]

3. a) Explain the application of Rebound hammer and its working principle. [8]
   b) Explain the methods of assessment of corrosion. [8]

4. a) Explain the different types of building failures. [8]
   b) Explain the various methods of repair of cracks in concrete buildings. [8]

5. a) Explain the materials used for repair of buildings. [8]
   b) Explain the various types of admixtures and necessity of using admixtures. [8]

6. a) Explain the following:
   (i) Grouting and
   (ii) Externally bonded plates [8]
   b) Explain the procedure for under water repair. [8]

7. a) Explain the various observations indicating the distress in structures. [8]
   b) Explain the procedure for rehabilitation of a dam. [8]

Code No: **RT42014C** **R13** **Set No. 3**

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2019

REPAIR AND REHABILITATION OF STRUCTURES

(Civil Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
*****

PART–A *(22 Marks)*

1. a) What are the different patterns of cracks in concrete structures? [3]
   b) Explain the advantages and disadvantages of NDT methods. [4]
   c) Explain the various types of failures of buildings. [4]
   d) Explain the application of acoustical emission method. [4]
   e) Explain the precautions to be followed for different types of repair techniques. [3]
   f) What are the various factors to be considered during the investigation of a structure for its rehabilitation? [4]

PART–B *(3x16 = 48 Marks)*

2. a) Explain the various preventive measures to be taken to reduce deterioration of concrete structures. [8]
   b) Explain the mechanism of deterioration of concrete structures. [8]

3. a) Explain the application of ultrasonic pulse velocity test. [8]
   b) Explain the methods for measurement of corrosion. [8]

4. a) Explain the different causes for failure of buildings. [8]
   b) Explain the methodology for investigation of failures in buildings. [8]

5. a) Explain the procedure for the measurement of corrosion activity. [8]
   b) Explain the application of various types of natural admixtures for repair and rehabilitation of structures. [8]

6. a) Explain the following:
      (i) Jacketing and
      (ii) Underpinning [8]
   b) Explain the equipment used for different types of repair techniques. [8]

7. a) Explain the preliminary tests to identify the distress in structures. [8]
   b) Explain the procedure for rehabilitation of bridge piers. [8]

Code No: **RT42014C** **R13** **Set No. 4**

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2019

REPAIR AND REHABILITATION OF STRUCTURES

(Civil Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
*****

PART–A *(22 Marks)*

1. a) Explain the effect of temperature on concrete structures. [3]
   b) Explain the importance of pull out test. [4]
   c) Explain the various causes for failure of buildings. [3]
   d) Explain the behavior of concrete under corrosion of reinforcement. [4]
   e) Explain the precautions to be followed for under water repair technique. [4]
   f) Distinguish between repair and rehabilitation of structures. [4]

PART–B *(3x16 = 48 Marks)*

2. a) Explain the different chemical processes responsible for deterioration of concrete structures. [8]
   b) Explain the different types of cracks in concrete structures and their quantification. [8]

3. a) Explain the NDT method to estimate the strength of concrete. [8]
   b) Explain the various methods for assessment of corrosion. [8]

4. a) Explain the different types of failures of buildings. [8]
   b) Explain the various methods of repair of concrete buildings. [8]

5. a) Explain the materials used for repair and rehabilitation of structures. [8]
   b) Explain the role of NDT methods in repair and rehabilitation of structures. [8]

6. a) Explain the following:
      (i) Shotcrete and
      (ii) Underpinning [8]
   b) Explain the equipment used for repair of buildings. [8]

7. a) Explain the various factors indicating the distress in structures. [8]
   b) Explain the procedure for rehabilitation of canals. [8]