SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES
(AUTONOMOUS)

QUESTION BANK

Year / Semester: III B.Tech VI Semester **Regulation: R23**

Subject and Code: REPAIRS AND REHABITATION OF STRUCTUES (23CIV364D)

SYLLABUS

COURSE EDUCATIONAL OBJECTIVES:

1. To discuss quality of concrete, durability aspects, causes of deterioration, assessment of distressed structures,
2. To explain the aspects of quality of concrete
3. To know the special concreting methods in repairing works
4. To study the techniques for repairing of structures.
5. To study the demolition techniques and procedures.

UNIT I: MAINTENANCE AND REPAIR STRATEGIES

Maintenance-Repair and Rehabilitation-Facets of Maintenance-importance of Maintenance-Various aspects of Inspection-Assessment procedure for evaluating damaged structure- causes of deterioration.

UNIT II: STRENGTH AND DURABILITY OF CONCRETE

Quality assurance for concrete – Strength-Durability and Thermal properties of concrete - Cracks, different types, causes – Effects due to climate, temperature, Sustained elevated temperature, Corrosion -Effects of cover thickness.

UNIT III: ADVANCED SPECIAL CONCRETES

Polymer concrete-Sulphur infiltrated concrete-Fiber reinforced concrete-High strength concrete-High performance concrete-Vacuum Concrete-Self compacting concrete- Geopolymer concrete-Reactive powder concrete-Concrete made with industrial wastes.

UNIT IV: TECHNIQUES FOR REPAIR, REHABILITATION AND RETROFITTING OF STRUCTURES

Non-destructive Testing Techniques-Epoxy Injection-Shoring-Underpinning-Corrosion protection techniques–Corrosion Inhibitors-Corrosion resistant steels-Coatings to reinforcement cathodic protection. Strengthening of Structural elements, Repair of structures distressed due to corrosion, fire, leakage, and earthquake.

UNIT V: DEMOLITION TECHNIQUE

Demolition techniques - Engineered demolition methods - Case studies.

Prepared by MR.N. NAVENDRA KUMAR

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES
(AUTONOMOUS)

QUESTION BANK

Year / Semester: III B.Tech VI Semester **Regulation: R23**

Subject and Code: REPAIRS AND REHABITATION OF STRUCTUES (23CIV364D)

Max Marks: 10

S.No.	CO	Questions	BT
Unit I: (MAINTENANCE AND REPAIR STRATEGIES)			
1	**1**	a. List out the various types of maintenance operations and explain in detail. b. What is maintenance? List out the importance of maintenance.	**L4**
2	**1**	Describe the various repair strategies for RC buildings.	**L3**
3	**1**	Describe about the inspection to be carried out during and after the construction of structure.	**L4**
4	**1**	With graph explain the service life behavior of a concrete structure with respect to maintenance.	**L3**
5	**1**	Identify the various steps involved in the systematic approach of investigations and the factors to be ascertained.	**L5**
6	**1**	a. Discuss about the facets of maintenance. b. Write down the types of inspection carried out for concrete structure.	**L4**
7	**1**	As a site engineer examine what are the factors you would check during the day of concreting to assure quality in construction? Explain in detail.	**L3**
8	**1**	With the flow chart analyze the steps involved in the assessment procedure for evaluate damages in a structure and to carry out rehabilitation work.	**L5**
9	**1**	Describe in detail about the repair aspect of maintenance	**L4**
10	**1**	Construct a flow diagram for repair and maintenance during material selection, construction and service life period of a structure.	**L3**
11	**1**	Analyze the work involved in rehabilitation work of a structure.	**L3**

Prepared by MR.N. NAVENDRA KUMAR

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES
(AUTONOMOUS)

QUESTION BANK

Year / Semester: III B.Tech VI Semester **Regulation: R23**

Subject and Code: REPAIRS AND REHABITATION OF STRUCTUES (23CIV364D)

S.No.	CO	Questions	BT
Unit II: (STRENGTH AND DURABILITY OF CONCRETE)			
1	2	**a.** Write a brief note on permeability of concrete. **b.** Discuss the various factors influencing the corrosion.	L4
2	2	**Why quality assurance for structure is needed? List out the** components of quality assurance for building and explain it in detail.	L3
3	2	**List the various parameters affecting the quality of concrete** construction. Explain any three in detail.	L4
4	2	What is crack? Explain the classification and causes of cracks.	L3
5	2	**Explain about the design and constructional errors for concrete** building.	L5
6	2	Elaborately explain about the effect of temperature on concrete.	L4
7	2	Explain different types of cracks found in concrete structures. Also list the remedial measures.	L3
8	2	Ideally, from the standpoint of crack resistance, a concrete should have low shrinkage and high extensibility. Give examples to show why this may not be possible to achieve in practice.	L5
9	2	**Illustrate the significance of the carbonation of concrete, Passivity** of steel and state of oxidation of iron with respect to the corrosion of steel in concrete.	L4
10	2	**Discuss about the effect of sustained elevated temperature on** concrete and steel	L3
11	2	**a.** With chemical equation how will you evaluate the mechanism of corrosion. **b.** Write short note on structural cracks	L4

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES
(AUTONOMOUS)

QUESTION BANK

Year / Semester: III B.Tech VI Semester **Regulation: R23**

Subject and Code: REPAIRS AND REHABITATION OF STRUCTUES (23CIV364D)

S.No.	CO	Questions	BT
Unit III: (ADVANCED SPECIAL CONCRETES)			
1	**3**	**a.** How polymerization is achieved in polymer concrete? Explain in detail. **b.** Explain the behavior of steel fiber reinforced concrete as a repair material.	**L4**
2	**3**	Explain the types of fibers used in concrete with its advantages and disadvantages.	**L3**
3	**3**	Write short notes on Self compacting concrete and its applications.	**L4**
4	**3**	Write short notes on the manufacturing process and applications of Sulphur infiltrated concrete.	**L3**
5	**3**	Explain the manufacturing process, properties and uses of High Performance concrete.	**L5**
6	**3**	Write short notes on Geopolymer concrete.	**L4**
7	**3**	Describe in detail the properties and applications of polymer concrete.	**L3**
8	**3**	Describe in detail about the reactive powder concrete.	**L5**
9	**3**	Explain in detail about special material manufacturing procedure and application of polymer modified concrete.	**L4**
10	**3**	List the methods of testing self-compacting concrete and explain the methods in detail.	**L3**
11	**3**	Illustrate the behavior of vacuum concrete and Geopolymer concrete by comparing the properties on uses, manufacturing processes and its advantages.	**L3**

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES
(AUTONOMOUS)

QUESTION BANK

Year / Semester: III B.Tech VI Semester **Regulation: R23**

Subject and Code: REPAIRS AND REHABITATION OF STRUCTUES (23CIV364D)

S.No.	CO	Questions	BT
Unit IV: (TECHNIQUES FOR REPAIR, REHABILITATION AND RETROFITTING OF STRUCTURES)			
1	**4**	a. Identify the Non-destructive testing equipment's and describe in detail b. State the uses of surface hardness method and explain it with neat sketch.	**L4**
2	**4**	State the uses of surface hardness method and explain it with neat sketch.	**L3**
3	**4**	State the purpose of underpinning and explain its method with neat sketch.	**L4**
4	**4**	Explain the various methods of polymer coating applied on the surface of rebar.	**L3**
5	**4**	Describe the procedure of fusion bonded epoxy coating of rebars with a simple sketch. Also give the advantages and disadvantages.	**L5**
6	**4**	Estimate the following NDT techniques as per IS Rebound hammer test, Ultrasonic pulse velocity.	**L4**
7	**4**	Examine the method of preventing corrosion in the structure.	**L3**
8	**4**	Explain how cracks may be sealed by using epoxy Injection.	**L5**
9	**4**	Explain in detail about the in-situ load test performed to assess an existing structure.	**L4**
10	**4**	Define the term underpinning. Discuss any two of its methods mentioning its applicability.	**L3**
11	**4**	List the significance of performance and integrity test on concrete and explain any one method in detail.	**L3**

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES
(AUTONOMOUS)

QUESTION BANK

Year / Semester: III B.Tech VI Semester **Regulation: R23**

Subject and Code: REPAIRS AND REHABITATION OF STRUCTUES (23CIV364D)

S.No.	CO	Questions	BT
Unit V: (DEMOLITION TECHNIQUE)			
1	5	a. With simple sketch explain the methods of improving the load carrying capacity of existing column and beams. b. How do you repair a structure distressed due to corrosion. Explain in detail.	L4
2	5	Explain different methods of strengthening the concrete structures against earthquake.	L3
3	5	With simple sketches explain the methods of improving the strength of existing columns and beams.	L4
4	5	Explain briefly about the demolition techniques.	L3
5	5	Under what condition strengthening of foundation is required? Explain how columns strengthened by section enlargement technique with the help of neat sketch.	L5
6	5	How cracked reinforced concrete elements are repaired by providing additional steel?	L4
7	5	Illustrate the stitching procedure to repair the flexural cracks in slab and beam with help of neat sketch.	L3
8	5	Discuss the different methods of strengthening the concrete structures against earthquake.	L5
9	5	Demonstrate a case study of a building affected by fire and discuss its various effects. Also suggest suitable methods of remedy.	L4
10	5	Explain the procedure for demolishing main structural members like columns, beams and slabs with the help of neat sketch.	L3
11	5	What are the allied activities accompanying the demolition process?	L3

Prepared by MR.N. NAVENDRA KUMAR

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES
(AUTONOMOUS)

QUESTION BANK

Year / Semester: III B.Tech VI Semester **Regulation: R23**

Subject and Code: REPAIRS AND REHABITATION OF STRUCTUES (23CIV364D)

Note: L1-Remembering, L2-Understanding, L3-Applying, L4-Analyzing, L5-Evaluating, and L6-Creating

The Six Levels of Bloom's Taxonomy:

1. **Remembering:** Retrieving, recognizing, and recalling relevant knowledge from long-term memory (e.g., list, define, name, locate).
2. **Understanding:** Constructing meaning, explaining ideas, or concepts (e.g., summarize, interpret, classify, compare).
3. **Applying:** Using information in new situations or implementing procedures to solve problems (e.g., solve, use, demonstrate, implement).
4. **Analyzing:** Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure (e.g., contrast, categorize, distinguish, diagram).
5. **Evaluating:** Making judgments based on criteria and standards through checking and critiquing (e.g., judge, critique, justify, defend, argue).
6. **Creating:** Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure (e.g., design, construct, develop, formulate).

Instruction to Faculty Members:

- **Strictly follow the prescribed question paper template without deviation.**
- **Text book reference to quoted end of the fifth unit**
- **Set a** minimum of ten (10) **and a** maximum of fifteen (15) **subjective questions per unit. Each question shall carry** ten (10) marks**.**
- **Questions may include sub-questions as per the prescribed pattern: B.Tech: 10M** or **5M + 5M** or **6M + 4M**

Prepared by MR.N. NAVENDRA KUMAR

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES
(AUTONOMOUS)

QUESTION BANK

Year / Semester: III B.Tech VI Semester **Regulation: R23**

Subject and Code: REPAIRS AND REHABITATION OF STRUCTUES (23CIV364D)

- **For** M.Tech**, questions shall be set as per the following pattern only: 12M** or **6M + 6M**

Prepared by MR.N. NAVENDRA KUMAR