



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)**

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QUESTION BANK (DESCRIPTIVE)

Subject with Code: Structural Health Monitoring (19CE1011)

Course & Branch: M.Tech – SE

Year & Sem: I M.Tech & I-Sem

Regulation: R19

UNIT-I

- 1 a) what is Structural Health Monitoring? Explain Scope of Structural Health Monitoring?
b) What are the objectives of monitoring the health of a structure? Explain about Damage Identification?
2. Explain the Principle and Organization of a Structural Health Monitoring System?
3. a) Differentiate between Non-Destructive Evaluation (NDE) and Structural Health Monitoring?
b) Explain the Limitations of Non-Destructive Evaluation (NDE) Techniques?
4. Explain the Advantages of Structural Health Monitoring System?
5. Explain the Role of Smart Materials in Structural Health Monitoring System and Discuss about Active and Passive Smart Materials?
6. a) Explain the Role of Piezoelectric Sensors in Structural Health Monitoring System?
b) Explain about Electrical-Mechanical Impedance (EMI) Method?
7. Explain the Role of Magnetostrictive Sensors in Structural Health Monitoring System?
8. Explain the Role of Optical Fibre Sensors in Structural Health Monitoring System?
9. Explain the role of different types of sensors in health monitoring of structures?
10. a) Explain the Challenges in implementation of Structural Health Monitoring System?
b) Discuss about Effective Structural Health Monitoring System Methodology?

UNIT-II

1. Explain the Applications of Structural Health Monitoring in Engineering Structures?
2. What is Integrated Structural Health Monitoring System? Explain the Monitoring Strategies in Structural Health Monitoring?
3. Explain the Applications of Structural Health Monitoring in Bridge Structures?
4. Explain the Applications of Structural Health Monitoring in Concrete Structures?
5. Explain the Applications of Structural Health Monitoring in Post Tensioned Cables?
6. a) Explain the Elasticity Equations for Plate Vibration?
b) Explain the General Equations for Axial Vibrations of Rectangular Plates?
7. Explain the General Equations for Axial Vibrations of Circular Plates?
8. Explain the Equation of Motion for Axisymmetric Vibration of Circular Plates?
9. Explain the General Equations for Flexural Vibrations of Rectangular Plates?
10. Explain the General Equations for Flexural Vibrations of Circular Plates?

UNIT-III

- 1 a) Differentiate between Non-Destructive Testing and Destructive Testing Methods?
b) Explain importance and Need of Non-Destructive Testing?
2. a) Explain the Basic Methods for Non-Destructive Testing of Concrete Structures?
b) Explain Any Two Methods for Quality Control Testing of Concrete?
3. Explain briefly about Partially Destructive Strength Tests?
4. a) Explain Principle of Cover Meter and give its Applications and Limitations?
b) Explain Principle of Concrete Resistance Meter and give its Applications and Limitations?
5. a) Explain Principle of Thermography and give its Applications and Limitations?
b) What is Acoustic Emission Testing (AET)? Explain Briefly.
6. a) Explain Principle of Rebound Hammer Test and give its Applications and Limitations?
b) Explain the Factors influencing Test results in of Rebound Hammer Test?
7. a) Classify different Non-Destructive Testing Methods. Justify any three Methods for NDT
b) What do you mean by Thermography? Explain briefly.
8. What is Visual Inspection? Discuss Tools and Equipment for Visual Inspection? Explain Procedure of Visual Inspection.
9. Explain Rebound Hammer Test With Neat Sketch? Explain Applications of Rebound Hammer Test?
10. List any Four Methods of Non-Destructive Testing and give its Advantages and Limitations?

UNIT-IV

1. (a) Explain the general procedure for Half Cell Electrical Potential method.
(b) What are the applications of Half Cell Electrical Potential Testing method?
2. Explain the Principle, application and disadvantages of Ultrasonic Testing Technique?
3. Explain about the general procedure for resistivity measurement.
4. What are the fundamental principles for Electromagnetic methods of testing concrete?
5. Write about the equipment for radiographic testing method with neat sketches.
6. Explain the general procedure for radiographic testing methods.
7. (a) What are the factors influencing the pulse velocity measurement.
(b) Explain principle and procedure for Ultrasonic pulse velocity test
8. Explain Principle and Procedure of any two durability Non-Destructive Techniques?
9. Explain the Applications and disadvantages of Electromagnetic Methods of Testing Concrete
- 10.(a) Explain principle and procedure for permeability test.
(b) What are the limitations of permeability test?

UNIT-V

1. Explain the Process of Guniting in Detail With Figure.
2. Discuss the various types of Blanket Repair Techniques.
3. Explain the process of Dry mix shotcrete.
4. Enumerate the different methods available for repairs of concrete works.
Discuss any one in detail
5. Write short notes on Grout pre placed aggregate method.
6. Explain beam shear strengthening in detail.
7. Explain about external and internal post tensioning technique in beam shear strengthening?
8. Explain the methods of retro fitting techniques.
9. What are the types of repairs and explain about repair materials.
10. What are the Crack Repair Techniques and Explain Briefly about any Two Techniques?