Ref. No.: Ex/PG/CT/T/212/2024

Master of Construction Engg. Second Year 1st Semester Exam, 2024

CONDITION ASSESSMENT & HEALTH MONITORING OF STRUCTURES – II

Time : Three hours | Full Marks : 100

(50 marks for each Part)

(Use sepatate Answer Script for each Part)

PART I (50 Marks)

Answer any **two questions**. All question carry equal marks. Explain your answer with neat sketches if necessary. Assume any other relevant data not provided.

1. a) Discuss **Structural Health Monitoring (SHM)** and its **classification** **4**

   b) Discuss the relationship of **Structural Health Monitoring** with **Structural Reliability** and **Maintenance Cost**. **3**

   c) Define "**Damage**" in the context of **Structural Integrity** **2**

   d) Define '**Inverse Approach**' in the context of **SHM** **4**

   e) What are the different types of **uncertainties associated** with the system identification approaches of structural Health Monitoring **3**

   f) Discuss on the **advantages & limitations** of the following methods

      a. **Non-destructive testing** of Structures **3**
      b. **Load Test** of Structures **3**
      c. Based on the **Static System Identification** **3**

2. a) Discuss on different steps of **Fabrication** in chronological order **20**

   b) What are the common **defects** encountered in welding practices? **5**

3. a) Discuss briefly on the principle, procedure and interpretation criteria of **load test** for **flexural members** of a structure. **15**

   b) Discuss SHM based on system identification from limited static responses adopting '**Static Condensation Technique**' **10**

[Turn over

Master of Construction Engineering 2nd year 1st semester Examination – 2024
Subject: **Condition Assessment and Health Monitoring of Structures-II**

Time : Three hours **Full Marks: 100**

Part-II(Full Marks-50)
Use separate Answer Sheet for Each Part

Answer any ten questions [10 ×5=50]

Write a short note

1. Ultra sonic Test of Steel.
2. DP test of Steel.
3. MIG and TIG welding.
4. Distortion of Steel due to Welding.
5. Radiography Test.
6. Arc Welding Process.
7. Fracture and fatigue of steel.
8. Static and dynamic impact on a steel bridge.
9. Laminations of steel.
10. Riveted, welded and bolted connections.
11. Quality control aspect of welded joints.
12. Types of Steel joint.
13. Riveting, Welding and bolting along with advantages, disadvantages.
14. Types of welding with sketches
15. Types of riveting with sketches.