

27 APR 2023

Reg. No.

Question Paper Code

11823

**B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2023**

Seventh Semester

**Mechanical Engineering**

**ME8097 - NON DESTRUCTIVE TESTING AND EVALUATION**

(Regulations 2017)

Duration: 3 Hours

Max. Marks: 100

**PART - A (10 × 2 = 20 Marks)**

Answer ALL Questions

- |  | <i>Marks,<br/>K-Level, CO</i> |
|--|-------------------------------|
| 1. List the optical aids used for visual inspection.         | 2,K1,CO1                      |
| 2. Contrast destructive testing and non-destructive testing. | 2,K2,CO1                      |
| 3. List different types of developer used in LPT.            | 2,K1,CO2                      |
| 4. Compare Fluorescent penetrant and Visible penetrant.      | 2,K1,CO2                      |
| 5. Examine the characteristics of Infrared waves.            | 2,K1,CO3                      |
| 6. What is thermography testing?                             | 2,K1,CO3                      |
| 7. Name the couplants used in ultrasonic testing.            | 2,K1,CO4                      |
| 8. List the properties of Acoustic waves.                    | 2,K1,CO4                      |
| 9. Define Fluoroscopy.                                       | 2,K1,CO5                      |
| 10. Define "Half-value layer".                               | 2,K1,CO5                      |

**PART - B (5 × 13 = 65 Marks)**

Answer ALL Questions

11. a) Explain in detail about the different types of Bore scopes used in visual inspection method with neat sketches. 13,K2,CO1
- OR**
- b) Explain with suitable sketch about the welding defects during welding process. 13,K2,CO1
12. a) Explain the Post-emulsifiable - lipophilic and solvent removable methods in liquid penetrant testing using process flow diagram. 13,K2,CO2
- OR**
- b) Explain about dry and wet magnetic particle inspection techniques with neat diagram. 13,K2,CO2

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

**11823**



13. a) Explain in detail about the elements of infrared detection system with block diagram. *13.K2.CO3*

**OR**

b) Explain with neat sketch Hall effect sensors in eddy current testing. *13.K2.CO3*

14. a) Explain the principle of ultrasonic testing with suitable block diagram and list the advantage and disadvantage. *13.K2.CO4*

**OR**

b) Discuss the factors influencing acoustic wave propagation and data acquisition in Acoustic Emission test. *13.K2.CO4*

15. a) Discuss about the safety aspects related to Radiographic testing and also write short notes on the penetrometers and sensitivity. *13.K2.CO5*

**OR**

b) Explain in detail about Xerography techniques with suitable sketch. *13.K2.CO5*

**PART - C (1 × 15 = 15 Marks)**

a) Discuss the NDT method used for testing of pressure vessels. *15.K2.CO6*

**OR**

b) Summarize the inspection of microstructure of weld by AE testing with suitable sketch. *15.K2.CO6*