

# CBCS SCHEME

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18ME823

## Eighth Semester B.E. Degree Examination, June/July 2025 Non-Destructive Testing and Evaluation

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. Differentiate between Destructive and Non-Destructive Testing with examples. (06 Marks)
- b. Discuss about Non-Destructive Testing methods used to detect manufacturing defects. (08 Marks)
- c. List the applications and limitations of NDT. (06 Marks)

OR

- 2 a. Name the visual aids used in visual inspection and explain any two in detail. (08 Marks)
- b. Differentiate between aided and un-aided visual inspection methods. (06 Marks)
- c. List the applications and limitations of visual inspection. (06 Marks)

### Module-2

- 3 a. State the principles and steps involved in liquid penetrant testing with sketches. (08 Marks)
- b. List the types of liquid penetrants and developers. (06 Marks)
- c. State the advantages and limitations of liquid penetrant test. (06 Marks)

OR

- 4 a. State the principle of magnetic particle testing and briefly explain the steps involved in testing. (06 Marks)
- b. Discuss briefly about the methods employed in generating magnetic fields for magnetic particle testing. (06 Marks)
- c. Elaborate on any two applications employing magnetic particle test with sketches. (08 Marks)

### Module-3

- 5 a. Discuss about the non-contact and contact temperature sensors used in thermal inspection. (08 Marks)
- b. Briefly explain the thermal inspection methods employed. (08 Marks)
- c. State the applications of thermal inspection. (04 Marks)

OR

- 6 a. State the working principle of eddy current inspection and briefly explain the methods employed to generate eddy currents. (08 Marks)
- b. Discuss about the eddy current sensing elements used in inspection. (06 Marks)
- c. State the advantages and limitations of eddy current inspection. (06 Marks)

### Module-4

- 7 a. Explain with sketches the following related to pulse echo method:
  - i) A scan system
  - ii) B scan system
  - iii) C scan system. (12 Marks)
- b. Discuss in detail the applications of ultrasonic inspection. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

**OR**

- 8 a. State the principle of acoustic emission inspection and highlight its advantages. (06 Marks)  
b. Discuss about the parameters governing acoustic emission inspection. (08 Marks)  
c. Briefly discuss about the applications of ultrasonic inspection. (06 Marks)

**Module-5**

- 9 a. With a neat sketch, explain the function of X-Ray tube in radiographic inspection. (06 Marks)  
b. List and discuss about the types and uses of filters and screens used in radiography. (08 Marks)  
c. State the ideal characteristics of films. (06 Marks)

**OR**

- 10 a. What is an exposure chart? How it is useful in practice? (06 Marks)  
b. What is the principle of computed tomography? What are its limitations and capabilities? (10 Marks)  
c. State the principle of fluoroscopy imaging technique. (04 Marks)

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