

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

B.Tech Degree S6 (R,S) / (WP), S4 (PT) Exam April 2025 (2019 Scheme)

**Course Code: MET312****Course Name: NON DESTRUCTIVE TESTING****Max. Marks: 100****Duration: 3 Hours****PART A***Answer all questions, each carries 3 marks.*

Marks

- |    |   |     |
|----|---|-----|
| 1  | List any three limitations of NDT   | (3) |
| 2  | “Visual perception is a cornerstone of Non-Destructive Testing” Do you agree with this statement? Describe importance of Visual perception in NDT | (3) |
| 3  | Differentiate between lipophilic emulsifier and hydrophilic emulsifier  | (3) |
| 4  | What are the safety precautions of LPI ?  | (3) |
| 5  | Describe the following terms i) Coercive force ii) Retentivity iii) Residual Magnetism  | (3) |
| 6  | List any three important characteristics of magnetic particles  | (3) |
| 7  | What is the need for Calibration of Equipments in UT  | (3) |
| 8  | Define the term acoustic impedance  | (3) |
| 9  | What are safety measures to be carried out during radiography testing?  | (3) |
| 10 | What do you mean by skin effect in ECT?   | (3) |

**PART B***Answer any one full question from each module, each carries 14 marks.***Module I**

- |    |  |     |
|----|--|-----|
| 11 | a) Clearly mention the areas of applications of NDT  | (6) |
|    | b) List different lighting sources used in Visual Inspection? Also describe special lighting arrangements? | (8) |

**OR**

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|----|---|-----|
| 12 | a) Explain any four advantages of Non-Destructive Testing over Destructive Testing?   | (6) |
|    | b) How Surface condition of the test specimen and physiological condition of the test affects the visual inspection ? Explain in detail | (8) |

**Module II**

- |    |  |     |
|----|--|-----|
| 13 | a) List any 4 defects that can be detected using LPI | (4) |
|----|--|-----|



- b) What are the properties required for a good penetrant used in Liquid Penetrant Inspection. Differentiate visual penetrants and fluorescent penetrants (10)

**OR**

- 14 a) What do you mean by false indications in LPI ? Describe reasons for false indications (6)
- b) What is the use of developer in Liquid Penetrant Inspection? Explain the different types of developers (8)

**Module III**

- 15 a) What is the use of field indicators in MPI? Explain any one type of field indicator used in MPI. (6)
- b) With neat sketches explain the working of central conductor technique and Magnetization using Yoke (8)

**OR**

- 16 a) What are the differences between dry continuous and wet continuous MPI? (6)
- b) Explain any two direct methods of magnetization used in MPI with neat sketches (8)

**Module IV**

- 17 a) Describe the working of any two ultrasonic transducers (8)
- b) Explain resonance testing technique in UT (6)

**OR**

- 18 a) With neat sketches explain the procedures followed in transmission method and Pulse echo method of UT (8)
- b) What are the different wave forms used in ultrasonic testing? (6)

**Module V**

- 19 a) Explain lift off effect, edge effect and end effect in ECT (6)
- b) What are the desirable characteristics of Films used in Radiography ? List advantages, Limitations and applications of RT (8)

**OR**

- 20 a) Explain the basic principle of RT ? Explain Panoramic technique RT (8)
- b) Discuss the relation between frequency and depth of penetration in ECT (6)

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