

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-VI EXAMINATION – WINTER 2025****Subject Code:3161923****Date:25-11-2025****Subject Name:Non destructive Testing****Time:02:30 PM TO 05:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

MARKS

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| Q.1 | (a) Differentiate between Destructive and Non- Destructive testing. | 03 |
| | (b) Explain the scope of NDT. | 04 |
| | (c) Explain the working of computer enhanced visual inspection system with a neat diagram. | 07 |
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| Q.2 | (a) What are the properties required for a good penetrant used in Liquid Penetrant Inspection (LPI)? | 03 |
| | (b) Differentiate between ordinary penetrant testing and fluorescent penetrant testing. | 04 |
| | (c) What is the use of developer in Liquid Penetrant Inspection? Explain the different types of developers. | 07 |
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| OR | | |
| | (c) Explain procedure used for testing a component using Magnetic particle inspection (MPI). | 07 |
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| Q.3 | (a) What is sensitivity in MPI? | 03 |
| | (b) Explain various methods of magnetization used in MPT. | 04 |
| | (c) List the advantages and disadvantages of Magnetic Particle Inspection. | 07 |
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| OR | | |
| Q.3 | (a) Define permeability, magnetizing force, residual magnetism. | 03 |
| | (b) What are the limitations of ultrasonic inspection? | 04 |
| | (c) With sketches, explain different modes of display in Ultrasonic Testing. | 07 |
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| Q.4 | (a) What are the properties of X- and Gamma Rays? | 03 |
| | (b) What are the characteristics of ultrasonic waves? | 04 |
| | (c) With the help of a diagram explain the Pulse echo technique of Ultrasonic Testing. | 07 |
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| OR | | |
| Q.4 | (a) Explain any two types of screens used in radiographic testing. | 03 |
| | (b) What are safety measures to be carried out during radiography testing? | 04 |
| | (c) Explain principle of radiographic testing and give it applications and limitations. | 07 |
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| Q.5 | (a) Define 'lift off effect', 'edge effect' and 'end effect' in ECT. | 03 |
| | (b) What are the advantages and limitations of ECT? | 04 |
| | (c) Explain constant current drive and scanning probe ECT techniques. | 07 |
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| OR | | |
| Q.5 | (a) Write the limitations of Leak and pressure testing. | 03 |
| | (b) List Various methods of pressure and leak testing and explain any one of them. | 04 |
| | (c) State the principal of Leak and pressure testing and explain it in details. | 07 |
