

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI EXAMINATION – SUMMER 2025

Subject Code:3161923

Date:30-05-2025

Subject Name: Non destructive Testing

Time:10:30 AM TO 01:00 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.

- Q.1** (a) Differentiate Destructive Testing and Non Destructive Testing. **03**
(b) Highlight the use of Borescope in visual testing. **04**
(c) State principle of liquid penetrant testing (LPT) and with neat sketch explain different steps of LPT. **07**
- Q.2** (a) Briefly give application and limitations of Visual Testing. **03**
(b) Write note on piezoelectricity **04**
(c) Draw neat sketch of Normal, TR and Angle probes and standard test block used for ultrasonic testing. **07**
- OR**
- (c) Explain UT A-scan, B-scan and C-scan. **07**
- Q.3** (a) Explain principle of radiography **03**
(b) Write note on eddy current testing. **04**
(c) How the pulse-echo method of ultrasonic inspection is carried out? State the advantages and disadvantages of pulse echo method. **07**
- OR**
- Q.3** (a) Difference between the fluorescent and visible penetrants. **03**
(b) What are the advantages and limitations of thermography testing? **04**
(c) Explain in brief the leak testing of heat exchanger tubes in a boiler. **07**
- Q.4** (a) Explain different type of magnetic particles used in MPT. **03**
(b) What is leak testing? What are the methods of leak testing? **04**
(c) Explain principle of leak testing and discuss Helium leak detection techniques with neat sketch. **07**
- OR**
- Q.4** (a) List out properties of X-rays and Gamma rays. **03**
(b) What are different types of sound waves? Explain. **04**
(c) Explain near zone, far zone and transition zone in UT. **07**
- Q.5** (a) What is leak and its different types? **03**
(b) Give salient features of acoustic emission technique. **04**
(c) Explain in brief about pressure decay and vacuum decay leak testing. **07**
- OR**
- Q.5** (a) State safety precaution in Industrial radiography. **03**
(b) List out factors influencing the selection of ultrasonic transducer. Classify ultrasonic transducers. **04**
(c) Explain the different methods of penetrant application? **07**
