

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI(NEW) EXAMINATION – WINTER 2022****Subject Code:3161923****Date:17-12-2022****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.

- Q.1** (a) State the objectives of non-destructive testing. List out the NDT methods. **03**
(b) Distinguish between aided and unaided visual testing method. **04**
(c) State the principle of liquid penetrant testing. Discuss the various steps involved in the liquid penetrant testing (LPT). **07**

- Q.2** (a) What is a longitudinal magnetization and circumferential magnetization in magnetic particle testing (MPT)? **03**
(b) What are the different methods of penetrant application? **04**
(c) Explain in details various steps involved in magnetic particle testing? **07**

OR

- (c) Distinguish between A-Scan, B-Scan, and C-Scan presentation in ultrasonic testing. **07**

- Q.3** (a) List the desirable characteristics of a good developer in LPT. **03**
(b) Explain eddy current testing working principle. **04**
(c) State the basic principle, advantages, limitations and applications of ultrasonic testing method. **07**

OR

- Q.3** (a) Explain briefly the gamma ray radiographic testing. **03**
(b) List out factors influencing the selection of ultrasonic transducer. Classify ultrasonic transducers. **04**
(c) Explain with sketch, the working principle of X-ray radiography and state its advantages, limitations and applications. **07**

- Q.4** (a) Discuss the uses of penetrometer in radiographic testing. **03**
(b) What do you mean by film graininess, film contrast and geometric unsharpness in radiography 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.4** (a) What is a lift off effect, edge effect and end effect in eddy current testing? **03**
(b) What are the advantages and limitations of thermography testing? **04**
(c) Discuss the use of Radiography Testing (RT) in the field of welding. Draw and explain the types of defects that can be observed during the same. **07**

- Q.5** (a) What is leak testing? What are the methods of leak testing? **03**
(b) Difference between the fluorescent and visible penetrants. **04**
(c) Discuss the application of eddy current testing method for crack detection, Non-conductive coatings and material thickness measurement. **07**

OR

- Q.5** (a) Explain different type of magnetic particles used in MPT. **03**

- (b) Explain working principle of acoustic emission testing with a neat sketch. **04**
- (c) Explain in brief about pressure decay and vacuum decay leak testing. **07**
