

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER– VII (NEW) EXAMINATION – WINTER 2021****Subject Code:2172102****Date:23/11/2021****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
<b>Q.1</b> (a) Differentiate NDT and DT methods.	<b>03</b>
(b) List advantages and limitations of DPT.	<b>04</b>
(c) List most commonly used NDT methods. State advantages and limitations of NDT.	<b>07</b>
<b>Q.2</b> (a) Why and how demagnetization is carried out?	<b>03</b>
(b) What is Visual examination? Explain principle of light intensity measurements.	<b>04</b>
(c) Explain the principle of MPT & its limitations.	<b>07</b>
<b>OR</b>	
(c) Discuss briefly about selection procedure of different NDT techniques for detection of defects.	<b>07</b>
<b>Q.3</b> (a) List out advantage and disadvantages of visual testing.	<b>03</b>
(b) With neat sketch discuss dye penetrant testing.	<b>04</b>
(c) On which principle leak and pressure test works? List out various methods for that. Explain any one method for leak and pressure test.	<b>07</b>
<b>OR</b>	
<b>Q.3</b> (a) What is leak and its different types?	<b>03</b>
(b) What is coplant in UT? What is its role? State its advantages and disadvantages.	<b>04</b>
(c) Which method is best for In situ inspection in pipe line of refinery? Why?	<b>07</b>
<b>Q.4</b> (a) Explain B-scan and C- scan CRT display in UT.	<b>03</b>
(b) Compare and contrast pulse echo and through transmission technique with reference to UT.	<b>04</b>
(c) “Eddy current testing is a versatile non destructive testing technique.” Explain the statement critically.	<b>07</b>
<b>OR</b>	
<b>Q.4</b> (a) Compare Properties of X-rays and gamma rays.	<b>03</b>
(b) Explain the Snell’s law. By using Snell’s law find refracted angle. Where incident angle of 35° of medium water to steel. Given $V_{L(\text{water})}=1830 \text{ m/s}$ , $V_{L(\text{Steel})} = 5850 \text{ m/s}$ , $V_s(\text{steel}) = 3250 \text{ m/s}$ .	<b>04</b>
(c) Discuss about ultrasonic transducers (probes).	<b>07</b>
<b>Q.5</b> (a) Explain the terms attenuation, beam spread and acoustic impedance in UT.	<b>03</b>
(b) Briefly suggest various ultrasonic inspection techniques.	<b>04</b>
(c) Write a short note on Eddy current testing.	<b>07</b>

**OR**

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| <b>Q.5</b> | <b>(a)</b> State safety precaution in Industrial radiography.             | <b>03</b> |
|            | <b>(b)</b> Explain basic principle of Radiographic examination.           | <b>04</b> |
|            | <b>(c)</b> Explain principle and techniques of Acoustic Emission Testing. | <b>07</b> |

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