Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–VII EXAMINATION – WINTER 2015**

**Subject Code: 172102** **Date:07/12/2015**

**Subject Name: Non Destructive Testing**

**Time: 10:30am to 1:00pm** **Total Marks: 70**

**Instructions:**

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

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|---|---|---|---|
| **Q.1** | **(a)** | List methods of NDT and give its advantages and limitations. | **07** |
| | **(b)** | State principle of visual testing. Give its advantages and limitations. List visual aids for visual testing. | **07** |
| **Q.2** | **(a)** | Explain principle of radiographic testing and give its applications and limitations. | **07** |
| | **(b)** | Draw neat sketch of Normal, TR and Angle probes and explain piezoelectricity. | **07** |
| | | **OR** | |
| | **(b)** | List the defects in parts manufactured by various processes with their causes and remedies. | **07** |
| **Q.3** | **(a)** | Explain the principle of ultrasonic testing. Give its applications, advantages and limitations. | **07** |
| | **(b)** | What is Magnetic particle testing? List its limitations. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Write short note on penetrameter used in RT. | **07** |
| | **(b)** | Differentiate X-rays and $\gamma$ rays. | **07** |
| **Q.4** | **(a)** | In terms of Leak Testing explain Leak, Real and Virtual Leak, gross and fine Leak, Leak rate and its units. Explain Helium Leak Detector with neat sketch. | **07** |
| | **(b)** | Discuss steps for dye penetrant test with neat sketch. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Write note on Acoustic Emission Testing. | **07** |
| | **(b)** | State dye penetrant test principle and explain capillary action, contact angle, adhesive force and cohesive force. Mention limitations of dye penetrant test. | **07** |
| **Q.5** | **(a)** | State how different NDT techniques are selected for defect detection. | **07** |
| | **(b)** | Explain the principle of thermography and give its applications. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Explain different types of sound waves and mode conversion. | **07** |
| | **(b)** | Explain the process of Eddy Current Testing with principle, applications and limitations. | **07** |

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