

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2017****Subject Code: 2172102****Date: 02/11/2017****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.

		MARKS
Q.1	(a) Differentiate NDT and DT methods.	03
	(b) Explain Visual examination method using Boroscope.	04
	(c) With the help of a diagram explain the Pulse echo technique of Ultrasonic Testing.	07
Q.2	(a) List advantages and limitations of DPT.	03
	(b) Write a brief note on (a) Penetrants (b) developers.	04
	(c) Briefly explain the sequence of operations in DPT.	07
	<b>OR</b>	
	(c) Explain in brief the leak testing of heat exchanger tubes in a boiler.	07
Q.3	(a) Why and how demagnetization is carried out?	03
	(b) Explain the principle of Magnetic Particle Testing.	04
	(c) Discuss briefly about selection of different NDT techniques for detection of defects.	07
	<b>OR</b>	
Q.3	(a) List applications of AET.	03
	(b) Briefly suggest various ultrasonic inspection techniques.	04
	(c) Explain principle and technique of Acoustic Emission Testing (AET).	07
Q.4	(a) Explain principles of Eddy Current Testing (ECT).	03
	(b) Compare advantages and limitation of Ultrasonic and Radiography testing.	04
	(c) Discuss techniques and applications of Thermography.	07
	<b>OR</b>	
Q.4	(a) What do you understand by sensitivity in ECT?	03
	(b) Explain basic principle of Radiographic examination.	04
	(c) Discuss about ultrasonic transducers (probes).	07
Q.5	(a) List out Properties of X-rays and gamma rays.	
	(b) Explain the term 'Film contrast' and 'subject contrast' in radiography.	04
	(c) Explain leak testing principle and brief about helium leak detection technique.	07
	<b>OR</b>	
Q.5	(a) State safety precaution in Industrial radiography.	03
	(b) Note down advantages and limitations of ultrasonic testing.	04
	(c) Explain briefly welding Radiography.	07