Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VI (NEW) EXAMINATION – WINTER 2021

Subject Code:3161923 Date:04/12/2021

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)**	Why and how demagnetization is carried out?	**03**
	(b)	Highlight the use of Borescope in visual testing.	**04**
	(c)	Discuss briefly about selection of different NDT techniques for detection of defects.	**07**
Q.2	**(a)**	What is capillary action and dwelling time in DPT.	**03**
	(b)	What are different types of sound waves? Explain.	**04**
	(c)	State principle of liquid penetrant testing (LPT) and with neat sketch explain different steps of LPT.	**07**
		OR	
	(c)	Explain principle of leak testing and discuss Helium leak detection techniques with neat sketch.	**07**
Q.3	**(a)**	Briefly explain thermal methods for NDT.	**03**
	(b)	Explain principle of magnetic particle testing and its limitations.	**04**
	(c)	Explain principle of Radiographic Testing and give its application and limitations.	**07**
		OR	
Q.3	**(a)**	List applications of Acoustic Emission Testing.	**03**
	(b)	Write a brief note on (a) Penetrants (b) developers.	**04**
	(c)	With the help of a diagram explain the Pulse echo technique of Ultrasonic Testing.	**07**
Q.4	**(a)**	Explain X Ray film processing.	**03**
	(b)	What is the use of penetrameter in Radiographic Testing?	**04**
	(c)	Write short note on X-ray generation with neat sketch in RT.	**07**
		OR	
Q.4	**(a)**	What is leak and its different types?	**03**
	(b)	Compare advantages and limitation of Ultrasonic and Radiography testing.	**04**
	(c)	Write a short note on Eddy current testing.	**07**
Q.5	**(a)**	Define geometric unsharpness (Ug) and write note on radiographic film.	**03**
	(b)	Write note on piezoelectricity.	**04**
	(c)	With neat sketch explain different types of ultrasonic probes.	**07**
		OR	
Q.5	**(a)**	What do you understand by sensitivity in Eddy current testing?	**03**
	(b)	Explain the term 'Film contrast' and 'subject contrast' in radiography.	**04**
	(c)	What is coplant in ultrasonic testing? What is its role? State its advantages and disadvantages.	**07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2022

Subject Code:3161923 Date:10/06/2022

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)**	Give the names of all destructive and non-destructive testing commonly carried out.	**03**
	(b)	List the typical characteristics of penetrant and developer in LPT.	**04**
	(c)	What is visual examination? Explain visual examination method using borescope.	**07**
Q.2	**(a)**	Why and how demagnetization is carried out?	**03**
	(b)	Discuss advantages and limitations of eddy current testing.	**04**
	(c)	State principle of liquid penetrant testing (LPT) and with neat sketch explains different steps of LPT.	**07**
		OR	
	(c)	What is couplant in ultrasonic testing? What is its role? State its advantages and disadvantages.	**07**
Q.3	**(a)**	What is contact angle, capillary action and dwelling time in LPT?	**03**
	(b)	Explain principle of magnetic particle testing and its limitations.	**04**
	(c)	With the help of a diagram explain the Pulse echo technique of Ultrasonic testing.	**07**
		OR	
Q.3	**(a)**	List out properties of X-rays and Gamma rays.	**03**
	(b)	Give salient features of acoustic emission technique.	**04**
	(c)	Which method is best suited for institute inspection of a pipe line of a refinery? Why?	**07**
Q.4	**(a)**	Discuss advantages and limitations of X-ray radiography.	**03**
	(b)	What is the use of penetrometer in radiographic testing?	**04**
	(c)	Explain ultrasonic testing (UT) A-scan, B-scan and C-scan.	**07**
		OR	
Q.4	**(a)**	State safety precaution in Industrial radiography.	**03**
	(b)	What are different types of sound waves? Explain.	**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)**	Define geometric unsharpness (Ug) and write note on radiographic film.	**03**
	(b)	Compare advantages and limitation of ultrasonic and radiography testing.	**04**
	(c)	Discuss techniques and applications of thermography.	**07**
		OR	
Q.5	**(a)**	What is leak and its different types?	**03**
	(b)	Explain principle of eddy current testing (ECT).	**04**
	(c)	Explain in brief the leak testing of heat exchanger tubes in a boiler.	**07**

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