

Code: 20ME4702D

**IV B.Tech - I Semester – Regular / Supplementary Examinations
OCTOBER 2024**

**NON-DESTRUCTIVE TESTING
(MECHANICAL ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

BL – Blooms Level

CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	Explain the significance of visual inspection in NDT and the factors affecting its effectiveness.	L2	CO2	7 M
	b)	Compare destructive and non-destructive testing methods.	L2	CO1	7 M
OR					
2	a)	Explain the role of developers in Liquid Penetrant Testing and their impact on the accuracy of test results.	L2	CO2	7 M
	b)	Discuss the importance of interpreting results in Liquid Penetrant Testing.	L2	CO2	7 M
UNIT-II					
3	a)	Describe the principle of demagnetization in Magnetic Particle Testing and its significance in ensuring accurate results.	L2	CO2	7 M

	b)	Discuss the types of magnetization methods used in Magnetic Particle Testing and their applications.	L2	CO2	7 M
OR					
4	a)	Discuss the effectiveness of Eddy Current Testing in detecting surface and subsurface defects in materials.	L2	CO2	7 M
	b)	Explain the role of sensing elements and probes in Eddy Current Testing and how they influence test results.	L2	CO2	7 M
UNIT-III					
5	a)	Discuss the applications of Acoustic Emission Testing in leak detection and structural integrity assessment.	L2	CO2	7 M
	b)	Explain the significance of sensitivity in Acoustic Emission Testing and how it affects the detection of flaws.	L2	CO2	7 M
OR					
6	a)	Discuss about different modes of display in Ultrasonic Testing and their role in flaw detection.	L2	CO2	7 M
	b)	Explain the limitations of Ultrasonic Testing in inspecting complex geometries and material types.	L2	CO2	7 M
UNIT-IV					
7	a)	Explain the basic principles of Thermography and its role in identifying hidden defects in materials.	L2	CO2	7 M

	b)	Discuss the types of detectors used in Thermography and their applications in different industries.	L2	CO2	7 M
OR					
8	a)	Explain the effects of radiation on film in Radiography Testing and the factors that influence image quality.	L2	CO2	7 M
	b)	Discuss the safety precautions required for handling electromagnetic radiation sources in Industrial Radiography.	L2	CO2	7 M
UNIT-V					
9	a)	Explain the criteria for selecting NDT methods for inspecting pressure vessels and pipelines in the oil and gas industry.	L2	CO3	7 M
	b)	Discuss the advantages of using multiple NDT methods for inspection of weldments.	L2	CO3	7 M
OR					
10	a)	Illustrate the challenges involved in inspecting weldments with complex geometries using NDT methods.	L3	CO3	7 M
	b)	Interpret the effectiveness of NDT methods in detecting internal defects in pipelines, considering their limitations.	L3	CO3	7 M