MME 4079

Exam Date & Time: 05-Dec-2023 (02:30 PM - 05:30 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

## SEVENTH SEMESTER B.TECH END SEMESTER EXAMINATIONS, NOV 2023

## Non Destructive Testing [MME 4079]

Ma	arks: 50	Duration: 180	mins.
		Α	
An	iswer all t	he questions.	
Ins	structions	to Candidates: Answer ALL questions	
1)		Briefly explain the basic elements of NDT and its importance.	
			(5)
	A)		
	B)	Sketch & explain the stages of liquid penetrant testing.	(3)
	C)	Explain the important properties of penetrant influence on performance of liquid penetration test.	(2)
2)		Explore the magnetic particle inspection methods.	
			(5)
	<b>A</b> )		(5)
	A) B)	Enumerate the advantages and limitations of liquid penetration testing	
	D)	Enumerate the advantages and miniations of inquid penetration testing.	(3)
	C)	Briefly explain the basic principle of magnetic particle inspection.	(2)
3)		Explore various methods of ultrasonic testing and explain any one method with neat sketch.	(5)
	A)		
	B)	Sketch & explain the basic principle of ultrasonic testing, Mention the advantages and	
	,	limitations.	(3)
	C)	Estimate the standard depth of penetration when performing an eddy current inspection on a piece of 304 corrosion resistant steel. The absolute permeability is $1.32 \times 10^{-6}$ H/m and a conductivity $1.45 \times 10^{6}$ Siemens/m. The frequency used to drive the eddy current probe is 50 kHz.	(2)
4)		Explain the term skin effect and edge effect in case of eddy current testing.	
.,		1	(5)
	A)		. /
	B)	What is Acoustic emission testing? Mention advantages and limitations.	(3)

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	C)	Enumerate the factors that influence the selection of eddy current test probes.	(2)
5)		What is geometrical un-sharpness in radiographic image? Explain the factors that affect the geometrical un-sharpness.	(5)
	A)		
	B)	Distinguish the active thermography and passive thermography.	(3)
	C)	If the intensity of an Iridium 192 source was found to be 62 milliroentgen/hour at 100 feet. Predict the intensity of same source at 1 foot distance using Newton's inverse square law.	(2)

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