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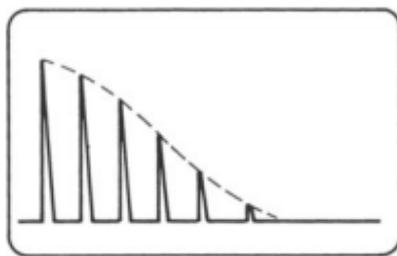
MANIPAL INSTITUTE OF TECHNOLOGY
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**II SEMESTER M.TECH. (CIVIL ENGINEERING) END SEMESTER
EXAMINATIONS MAY 2019**
SUBJECT: NON-DESTRUCTIVE TESTING OF MATERIALS [CIE 5282]
Date of Exam: **07/05/2019** Time of Exam: **9:00AM to 12:00PM** Max. Marks: **50**

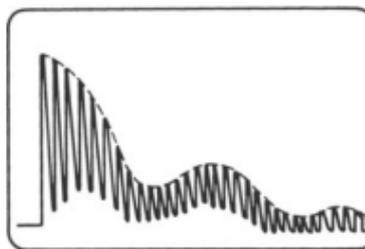
Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitably assumed.

| Q. No | | Marks | CO |
|-------|--|-------|----|
| 1A. | What is Non-destructive Testing (NDT)? Mention the advantages, disadvantages and limitations of NDT. | 5 | 1 |
| 1B. | What are the different types of penetrants and magnetic particles used in Liquid Penetrant Inspection and Magnetic particle Inspection respectively? Explain each one of them. | 5 | 1 |
| 2A. | What is Radiographic inspection method? Mention the advantages and disadvantages of Radiographic inspection method. | 5 | 1 |
| 2B. | What is real leak, virtual leak, permeation flow and transitional flow? | 2 | 1 |
| 2C. | What are the various types of probes used in Eddy current inspection? Explain each one of them. | 3 | 2 |
| 3A. | What are the equipment used in Acoustic Emission inspection? Explain each one of them. | 4 | 2 |
| 3B. | What is distance amplitude blocks? Explain how these are used as reference standards in Ultrasound inspection method? | 4 | 3 |
| 3C. | Explain how Bubble Leak test is conducted? | 2 | 4 |
| 4A. | With a neat sketch, explain the Ultrasound immersion scanning technique of detecting defects. | 6 | 4 |
| 4B. | Below are indications of a laminated plates obtained during inspection using Ultrasound NDT. Interpret the results. | 4 | 5 |



(a)



(b)



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|------------------|--|-----------------|-----------------|
| <p>5A</p> | <p>The thermal conductivity behaviour of some metals are shown below. Write your inference.</p> <div style="text-align: center;"> <p>Resistance</p> </div> | <p>5</p> | <p>5</p> |
| <p>5B</p> | <p>A steel member of a structure which was subjected to cyclic loading till its failure, was inspected using Acoustic Emission inspection method. The resultant graph is shown in figure. Interpret the plot and explain the failure behaviour of the member.</p> <div style="text-align: center;"> </div> | <p>5</p> | <p>5</p> |