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**Seventh Semester B.E. Degree Examination, Dec.2019/Jan.2020**  
**Non Destructive Testing**

Time: 3 hrs.

Max. Marks: 100

**Note:** 1. Answer any FIVE full questions, selecting at least TWO questions from each part.  
2. Draw neat sketch wherever necessary

**PART - A**

- 1 a. What are the objectives of NDE? What are the steps involved in NDE? (07 Marks)  
b. What are the factors influencing the reliability of NDE. (06 Marks)  
c. Give the summary of defects/properties evaluated by NDT. (07 Marks)
- 2 a. With a neat sketch, explain the principles of X-ray radiography. (08 Marks)  
b. Explain: i) Micro-radiography; ii) Film radiography. (06 Marks)  
c. Enumerate the defects in welding. (06 Marks)
- 3 a. Explain sound propagation in elastic material. (10 Marks)  
b. Enlist the advantages and disadvantages of ultrasonic testing. (10 Marks)
- 4 a. Explain clearly how material properties affect the speed of sound. Write down the general relationship between speed of sound and elastic constants. (10 Marks)  
b. Explain with suitable sketches, in brief the different methods of ultrasonic testing used in non destructive evaluation of materials. (10 Marks)

**PART - B**

- 5 a. What is LPT? Sketch and explain the process, also explain the limitations (10 Marks)  
b. Tabulate the advantages and disadvantages of LPT. (10 Marks)
- 6 a. Explain the following methods of generating magnetic field with the help of neat sketch. (10 Marks)  
i) Induction method ii) solenoid coil method.  
b. Explain the steps involved in magnetic particle test with the help of a process flow chart. (10 Marks)
- 7 a. Explain eddy current test system with the help of a neat sketch. (08 Marks)  
b. Explain the factors affecting eddy current with the help of neat sketches. (12 Marks)
- 8 a. Explain acoustic emission test with the help of a neat sketch. (08 Marks)  
b. Explain the working principle of thermal inspection. (06 Marks)  
c. Explain the holographic recording with the help of a neat sketch. (06 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42+8 = 50, will be treated as malpractice.