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10AE756

Seventh Semester B.E. Degree Examination, June/July 2019

**Non-Destructive Testing**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting at least TWO questions from each part.**

**PART – A**

- 1 a. Explain an overview of NDE. What are the factors influencing the reliability of NDT? (10 Marks)  
b. How do you identify defects in material? Explain the various methods used for evaluation of materials and composites by NDT methods. (10 Marks)
- 2 a. Explain Radiographic Inspection. Discuss the production of X-rays, absorption and scattering. (10 Marks)  
b. Explain the application of Gamma ray radiography. What is the role of radioactivity and gamma ray sources in identifying welding defects? (10 Marks)
- 3 a. Explain in brief principle of wave propagation. (10 Marks)  
b. Discuss the variables affecting an ultrasound test. (10 Marks)
- 4 a. Explain in brief:  
i) Ultrasonic application for thickness measurement  
ii) Types of scanning (10 Marks)  
b. Explain in brief:  
i) Welding inspection  
ii) Tube inspection (10 Marks)

**PART – B**

- 5 a. Discuss the basic concept of liquid penetrant tests with respective cohesion, adhesion and capillary rise. (10 Marks)  
b. Explain the various test parameters and procedures involved in liquid penetrant test process. (10 Marks)
- 6 a. Explain various classification of material used in magnetization. (05 Marks)  
b. Explain in brief:  
i) Magnetic field using an electric current  
ii) Surge method  
iii) Induction method  
iv) Solenoid coil method for magnetization materials (15 Marks)
- 7 a. Explain with neat sketch, principles of eddy current and generation of eddy current. (10 Marks)  
b. Explain with block diagram test system for Eddy current. (10 Marks)
- 8 Write short notes:  
a. Principle of thermal inspection  
c. Acoustic emission inspection  
c. Optical holography recording  
d. Interpretation and evaluation (20 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.