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Question Paper Code : 20800

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Eighth Semester

Mechanical Engineering

ME 6019 — NON DESTRUCTIVE TESTING AND MATERIALS

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List the various Manufacturing defects and service defects.
2. What are the physical characteristics that can be determined by NDT?
3. Mention any two materials that can be used as developers in LPT.
4. What is the effect of size and shape of the magnetic particles on the inspection process?
5. Differentiate between Active and Passive Thermography.
6. What are the characteristics of Eddy currents?
7. What is the major difference between Straight beam and Angle beam transducers?
8. What are the sources of Acoustic emission?
9. Differentiate between film and filmless techniques in Radiography.
10. State Inverse square law in Radiography.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Mention the various Mechanical, optical aids used in Visual Inspection. (6)
- (ii) Discuss in detail about the different types of Borescopes used in Visual Inspection with neat sketches. (10)

Or

- (b) Differentiate between Destructive and Non-Destructive testing.
12. (a) (i) Discuss about the physical principles of Liquid Penetrant testing. (6)
- (ii) Explain the Post-emulsifiable lipophilic and Solvent removable methods in Liquid Penetrant testing using process flow diagram. (10)

Or

- (b) (i) Discuss about the various ways of magnetizing the component for MPT. (12)
- (ii) Write down the limitations of Magnetic Particle Testing. (4)
13. (a) Discuss in detail the Contact and Non-contact inspection methods in Thermography with neat sketches. (16)

Or

- (b) Enumerate the various probes used in EDT with details and sketches.
14. (a) Explain the principle of Acoustic Emission technique. Discuss about the various parameters involved in AET.

Or

- (b) Enumerate the different ways of representing the data in Ultrasonic Inspection. Explain them in detail.
15. (a) Explain the process of Neutron Radiography and Computed Tomography.

Or

- (b) (i) Discuss about the safety aspects related to Radiographic Testing. (8)
- (ii) Write short notes on the penetrameters and sensitivity in radiography testing. (8)