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## Eighth Semester B.E. Degree Examination, Jan./Feb. 2023

### Non – Destructive Testing and Evaluation

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, choosing ONE full question from each module.**

#### Module-1

- 1 a. Discuss the comparison between Destructive and non – Destructive testing. (10 Marks)
- b. With neat sketch, explain Machine Vision and state application of Machine Vision. (10 Marks)

**OR**

- 2 a. Discuss the flaws and defects with neat sketch :
  - i) Five inherent discontinuities from casting
  - ii) Five welding defects. (10 Marks)
- b. Discuss the applications of NDT. (05 Marks)
- c. Discuss some of the common NDT methods. (05 Marks)

#### Module-2

- 3 a. With neat sketch, explain the liquid penetrant test. Mention its advantages. (14 Marks)
- b. Discuss the properties of Liquid penetrant. (06 Marks)

**OR**

- 4 a. Discuss the need of Demagnetization and explain any 2 methods of Demagnetisation. (10 Marks)
- b. With neat sketch, explain Magnetic rubber inspection and state applications of Magnetic particle test. (10 Marks)

#### Module-3

- 5 a. With neat block diagram, explain working process of Infrared Thermography. (10 Marks)
- b. Briefly explain Infrared detectors and application of Thermography. (10 Marks)

**OR**

- 6 a. Explain with neat sketch, the elements of typical eddy current inspection system. (10 Marks)
- b. Define Probes. Briefly explain different types of Probes in use. (10 Marks)

#### Module-4

- 7 a. Distinguish between A – Scan , B – Scan and C - Scan. (10 Marks)
- b. Explain Pulse – echo type method of Ultrasonic Inspection. (10 Marks)

**OR**

- 8 a. With neat sketch, explain Basic principle of Acoustic Emission Testing technique. (10 Marks)
- b. Explain briefly Acoustic Emission Parameters and applications of Acoustic Emission. (10 Marks)

#### Module-5

- 9 a. With neat sketch, explain X – Ray Radiography Principle and Radiation sources. (14 Marks)
- b. With neat sketch, explain X – Ray Film layers. (06 Marks)

**OR**

- 10 a. Explain Radiographic Sensitivity. (06 Marks)
- b. Explain Beam geometry in Radiography and Penetrameter. (10 Marks)
- c. Define : Compton effect and Bragg's law. (04 Marks)