

Code: ME8T2A

IV B.Tech - II Semester – Regular Examinations July -2021

**NON-DESTRUCTIVE EVALUATION
(MECHANICAL ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11x 2 = 22 M

1.

- a) Explain the basic properties of ultrasonic waves.
- b) Define the term mimics.
- c) Discuss various steps involved in magnetic particle testing.
- d) List the essential characteristics of magnetic particles.
- e) Explain the special processing techniques in X-ray Radiography.
- f) Explain the properties of X-rays.
- g) Define the term holography.
- h) State the principle behind acoustic holography technique.
- i) Give any two NDT methods to measure the thickness of the pipe.
- j) Explain the importance of NDT in Aerospace industry.
- k) Define the term paper radiography.

PART – B

Answer any **THREE** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) Illustrate with neat sketch about the following methods of scanning used in ultrasonic testing. 8 M
(i) A-Scan (ii) B-Scan (iii) C-Scan.
- b) Explain with suitable sketch about working principle of Ultrasonic testing. 8 M
3. a) Explain with suitable sketch about the working principle of Magnetic particle inspection and list its application. 8 M
- b) Illustrate with suitable sketch about working principle of Eddy current testing. 8 M
4. a) Explain with suitable sketch about working principle of Radiography testing. 8 M
- b) Describe the construction of radiographic film and list the factors to be considered for selection of Radiographic film. 8 M
5. a) Explain about the electron beam holography. 8 M
- b) Explain about holographic interferometry. 8 M

6. a) Explain about various types of defects in welded constructions and which type of NDT method is suitable to identify them. Explain in detail. 8 M

b) Explain about magnetic particle testing and liquid penetrant testing for flaws in casting. 8 M