

Code: ME8T2A

**IV B.Tech - II Semester – Regular / Supplementary Examinations  
MAY-2022**

**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) How accurate the Ultrasonic test while measuring surface topography?
- b) What are the characteristics of ultrasonic waves?
- c) Identify the instrument coils of eddy current testing.
- d) What is the concept of magnetic practical inspection?
- e) Differentiate X-Rays and Gamma Rays.
- f) How safety can be achieved with Industrial Radiography?
- g) Write steps in Holography method.
- h) Differentiate X-ray and electron beam holography technique.
- i) List the defects in casting.
- j) Write the principle of acoustical Holography.
- k) Write the importance of NDE.

## PART – B

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

3 x 16 = 48 M

2. a) Explain ultrasonic test setup with neat sketch. Explain how pulse echo technique is implemented in ultrasonic testing. 8 M
- b) Discuss the advantages, limitations and variables of ultrasonic testing. 8 M
3. a) Explain the principle and working of eddy current inspection with neat sketch. 8 M
- b) Discuss various applications of eddy current testing. 8 M
4. a) Write a short note on radiographic film and its processing. 8 M
- b) What are the sources for X and Gamma rays? Explain its interaction with matter and interpret the results. 8 M
5. a) What is the principle of Optical Holography method? Explain with neat sketch. 8 M
- b) What is the principle of X-ray Holography technique? Explain with neat sketch. 8 M
6. Explain about the applications of NDE in casting and welded constructions. 16 M