

B. Tech. Mech. Engg (Semester – 7th)**NON-DESTRUCTIVE TESTING****Subject Code: BMECD1721****Paper ID: [18112341]****Time: 03 Hours****Maximum Marks: 60****Instruction for candidates:**

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A**(2 marks each)**

Q1. Attempt the following:

- a) Write about applications of X-rays and γ -rays and its limitations.
- b) Write about the importance of NDE in Automotive industry.
- c) Write about magnetization and de-magnetization.
- d) Outline the span of NDE activities in railways.
- e) State piezo-electric effect.
- f) What are the characteristics of ultrasonic waves?
- g) What are the different types of light sources used in Visual Inspection?
- h) List any 4 defects that can be detected using LPI.
- i) What is the need for Calibration of Equipments in UT?
- j) How the quality of a good radiograph is accessed.

Section – B**(5 marks each)**

- Q2. Explain about the guidelines for acceptance, rejection and effectiveness of ultrasonic testing.
- Q3. Explain about standardization, calibration, Interpretation and evaluation of magnetic particle test.
- Q4. Discuss the working principle of Xero-Radiography.
- Q5. Explain how the surface roughness can be tested by using ultrasonic method.
- Q6. Summarize and explain the type of developers used in Liquid Penetration testing.

Section – C**(10 marks each)**

- Q7. Explain the need and significance of NDT in the light of the statement ‘destructive testing can completely explain the surface of the bulk property of the metals’
- Q8. Illustrate the steps involved in film processing of radiographic testing.
- Q9. What is the principle of MPI? Explain permeability, magnetizing force, coercive force, retentivity, residual magnetism.