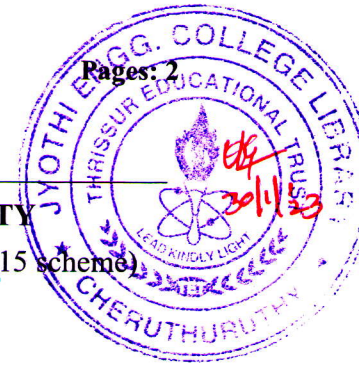


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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Fifth Semester B.Tech Degree (S,FE) Examination January 2023 (2015 scheme)

Course Code: ME367

Course Name: NON-DESTRUCTIVE TESTING

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any three full questions, each carries 10 marks.

Marks

- 1 a) Differentiate between destructive and non-destructive testing technique by giving examples. (5)
- b) Mention any three scope of NDT. (3)
- c) Mention any two limitations of NDT. (2)
- 2 a) Explain computer enhanced visual inspection system. (5)
- b) Describe any five special lighting techniques used in visual inspection. (5)
- 3 a) Explain the classification of penetrants based on physical properties and removal techniques. (4)
- b) How are the different types of developers applied? (6)
- 4 a) You are about to carry out a Liquid Penetrant Inspection. What are the safety precautions required to conduct the test? (5)
- b) Elaborate the principle of dye penetrant testing with a neat schematic. (5)

PART B

Answer any three full questions, each carries 10 marks.

- 5 a) Explain with figures, any two magnetisation techniques used in MPI. (6)
- b) What are the advantages and limitations of MPI? (4)
- 6 a) What is residual magnetism? What are the various types of residual magnetism? (5)
- b) A weldment needs to be inspected for cracks. Give a procedure to inspect the weld using magnetic particle inspection. (5)
- 7 a) With sketches, explain different modes of display in Ultrasonic Testing (UT). (6)
- b) With necessary figures, explain straight beam testing technique used in UT. (4)
- 8 a) With necessary figures, explain the transmission method used in UT. (5)
- b) Explain time of flight diffraction with necessary sketches. (5)

PART C

Answer any four full questions, each carries 10 marks.

- 9 a) Explain the process of production of X- Rays with a neat sketch. (5)
b) Compare and contrast between X-ray and Gamma ray. (5)
- 10 a) Explain Single wall, single image (SWSI) and double wall double image (DWDI) Inspection techniques in Radiographic testing. (6)
b) You have a Radiograph with you. How do you assess the quality of the same? (4)
- 11 a) Explain the steps involved in film processing in radiography testing. (5)
b) Mention the advantages and limitations of real time radiography. (4)
c) Give one application of real time radiography. (1)
- 12 a) Explain the terms i) Lift off effect ii) Edge effect with respect to Eddy Current Testing (ECT). (4)
b) With the help of neat sketches, explain how the thickness measurement is carried out using ECT? (6)
- 13 a) What are the advantages and limitations of ECT? (4)
b) You have some samples with discontinuities. You need to inspect them using ECT. With the help of necessary figures explain how the detection of discontinuities is carried out. (6)
- 14 a) With neat sketches, explain the construction and working of Reflection Probe and Differential Probe used in ECT. (6)
b) How material conductivity and magnetic permeability affect ECT? (4)
