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18ME823

Eighth Semester B.E. Degree Examination, July/August 2022 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. Define Non Destructive Testing (NDT). Compare Non Destructive Testing with Mechanical or Destructive Testing. (10 Marks)
- b. Describe the merits and limitations of Non Destructive Testing (NDT). (10 Marks)

OR

- 2 a. Define aided and unaided visual inspection and explain microscope and telescope aid for visual inspection. (10 Marks)
- b. Explain Borescope and Holography. (10 Marks)

Module-2

- 3 a. Explain the principle of liquid penetrant test with a neat sketch and types of penetrants. (10 Marks)
- b. List the types of developers and explain water washable method of liquid penetrant testing. (10 Marks)

OR

- 4 a. Define:
 - i) Magnetic flux density
 - ii) Magnetizing force
 - iii) Reluctance
 - iv) Magnetic forces
 - v) Magnetic field. (10 Marks)
- b. Explain types of magnetization techniques with neat sketch. (10 Marks)

Module-3

- 5 a. Briefly describe any five types of non contact thermal inspection sensors. (10 Marks)
- b. Describe liquid crystals and technique for applying liquid crystals. (10 Marks)

OR

- 6 a. Explain with a neat sketch principle of Eddy current testing and list its limitations. (10 Marks)
- b. Explain absolute and differential arrangement of coils used in eddy current inspection. (10 Marks)

Module-4

- 7 a. Explain A-scan, B-scan and C-scan modes of display. (10 Marks)
- b. Explain with neat sketch straight beam and angle beam pulse echo method. (10 Marks)

OR

- 8 a. Explain with a neat sketch principle of Acoustic Emission technique and list its applications. (10 Marks)
b. With block diagram, explain instrumentation for acoustic emission technique. (10 Marks)

Module-5

- 9 a. Explain with a neat sketch principle of radiography inspection and its applications. (10 Marks)
b. What is a penetrameter? Explain the types and characteristics of penetrameter. (10 Marks)

OR

- 10 a. Explain with a neat sketch principle of fluoroscopy and its major limitations. (10 Marks)
b. Explain computed tomography. (10 Marks)

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