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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

February / March 2023 Semester End Main Examinations

Programme: B.E.

Branch: Mechanical Engineering

Course Code: 20ME7DENDT

Course: Non-Destructive Testing

Semester: VII

Duration: 3 hrs.

Max Marks: 100

Date: 24.02.2023

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may suitably be assumed.

UNIT - I

1	a) Define NDT; explain the benefits and limitations of NDT.	10
	b) Define Visual inspection; explain briefly with a sketch of rigid boroscope in detail.	10

OR

2	a) Explain absolute and differential arrangement of coils used in eddy current inspection.	10
	b) Explain the principle of eddy current inspection of bar with neat a sketch.	05
	c) Explain i) magnetic permeability ii) lift off factor	05

UNIT - II

3	a) Explain the principle of liquid penetrant test with a neat sketch and types of penetrant methods.	10
	b) What are penetrants? List any four principle requirements of a good penetrants.	10

UNIT - III

4	a) Define i) magnetic flux density ii) magnetizing force iii) reluctance iv) magnetic forces and v) magnetic field.	10
	b) State the steps involved in magnetic particle testing and why illumination is essential in magnetic particle testing.	10

UNIT - IV

5	a) Explain with sketch the working principle of x-ray radiography and state its advantages, limitations and applications.	10
	b) Classify x-ray films used in industrial radiography and brief about construction of film with simple line diagram.	05
	c) Explain the types of radiation produced by radioactive decay (gamma ray) and their applications.	05

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
Revealing of identification, appeal to evaluator will be treated as malpractice.

UNIT - V

6 a) Describe the basic principle of ultrasonic testing with a suitable block diagram. **10**

b) How pulse echo method of ultra sonic inspection is carried out and also state the advantages, disadvantages of pulse echo method. **10**

OR

7 a) How ultrasonic testing procedure is formed in inspection of following areas i) inspection of casting ii) corrosion monitoring iii) weld inspection. **06**

b) What are ultrasonic transducers? Explain piezo electric transducer. **04**

c) Explain different types of ultrasonic transducers with construction and working details. **10**

B.M.S.C.E. - ODD SEM 2022-23