



PAPER ID-410713

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BTECH
(SEM VI) THEORY EXAMINATION 2023-24
NONDESTRUCTIVE TESTING

TIME: 3 HRS**M.MARKS: 100****Note: 1.** Attempt all Sections. If require any missing data; then choose suitably.**SECTION A****1. Attempt all questions in brief.****2 x 10 = 20**

a.	What do you mean by toughness and hardness?	02
b.	Name the important material properties that can be checked in destructive testing.	02
c.	What is penetrant?	02
d.	Define the use of developers and their types.	02
e.	Explain the term radiography testing.	02
f.	What do you mean by decay in radiography testing?	02
g.	What is Immersion testing?	02
h.	Explain the characteristics of an ultrasonic beam.	02
i.	What is the phenomenon of eddy current?	02
j.	Give some applications of Eddy's current testing.	02

SECTION B**2. Attempt any three of the following:****3 x 10 = 30**

a.	Describe the visual inspection technique and write down the different types of visual inspection	10
b.	What is Zygo test? Explain the basic steps involved in this inspection with a neat diagram	10
c.	X-rays of wavelength 1.5418 \AA are deflected by (111) plane in a crystal at an angle 29° with assumption of 1st order reflection. Calculate interatomic spacing.	10
d.	Explain CRO technique advantages and limitations. Explain principle of the Ultrasonic Testing technique in NDT	10
e.	Briefly explain why eddy current tests are less sensitive to small flaws than magnetic testing. Explain with suitable examples.	10

SECTION C**3. Attempt any one part of the following:****1 x 10 = 10**

a.	Differentiate between destructive and non-destructive testing with a suitable example. Explain the ringing test for the detection of surface cracks with the help of a neat sketch	10
b.	Discuss the effectiveness of oil whitening in detection of surface flaws of a casting? Write the various defects that can be checked in NDT.	10

4. Attempt any one part of the following:**1 x 10 = 10**

a.	Explain the working principle and test procedure of liquid penetrant Inspection. For detecting surface defects and also write the limitations and advantages.	10
b.	What do you understand by magnetic hysteresis? Explain different magnetization techniques used in magnetic particle testing & their sensitivity.	10

5. Attempt any one part of the following:**1 x 10 = 10**



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a.	Explain Bragg's Law and What do you mean by attenuation of electromagnetic radiation?	10
b.	Describe the differences between X-ray and gamma-ray. Explain the criteria for choosing one. Explain a case study of the human body X-ray. Explain precautions against radiation hazards.	10

6. Attempt any *one* part of the following: 1 x 10 = 10

a.	Briefly describe the transducers used in UI testing. What is the purpose of couplants and how they are used in the inspection process?	10
b.	What do you understand by Piezoelectricity? Explain it. How piezoelectric crystal is used in UI?	10

7. Attempt any *one* part of the following: 1 x 10 = 10

a.	Explain the types of probes used in Eddy Current Testing. What are the factors affecting probe selection? What is fill factor?	10
b.	Write Short Notes on a. Thermography and b. Acoustic Emission Testing.	10

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