

B TECH
(SEM-VIII) THEORY EXAMINATION 2018-19
NON DESTRUCTIVE TESTING

Time: 3 Hours

Total 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
- Enlist any five devices used for visual inspection test.
 - Define contrast ratio and contrast sensitivity.
 - What is dwell time?
 - What is skin effect?
 - What do you mean by nature of radiation?
 - Define Braggs's Law.
 - What is Attenuation?
 - Define Snells law.
 - Which type of probe is used to inspect the inside diameter of a bore?
 - Define Lenz's Law.

SECTION B

2. Attempt any *three* of the following: 10x3=30
- What are defects? Discuss any three casting, welding and forging defects which can only be detected by the NDT methods.
 - What are the properties the penetrants must have in order to work well? Classify Different types of penetrants.
 - Calculate the Bragg's angle, if X-ray of wavelength 1.542 Å deflected by plane (121) and interatomic spacing is 2.43 Å. Assume first order reflection.
 - With neat sketch explain the method of ultrasonic testing and write its applications, advantages and disadvantages.
 - Discuss the inspection of tubes of a heat exchanger and Fatigue crack inspection by Eddy current testing.

SECTION C

3. Attempt any *one* part of the following: 10x1=10
- Discuss about machine vision technology used in visual inspection method. Differentiate between Manual and Automated inspection method.
 - Write short notes on the following:
 - Oil Whitening Test
 - Hammer Test
4. Attempt any *one* part of the following: 10x1=10
- What are various methods of magnetization of a ferromagnetic material? Discuss any two of them with neat diagram.
 - What are the standards applicable to liquid penetrant testing? Write short notes on Leak test and Zyglö penetrant test.

5. **Attempt any *one* part of the following:** **10x1=10**
- Describe in detail about Rayleigh's scattering and Compton's scattering with neat diagram.
 - Write short notes on the following.
 - Cooling of anode
 - Focal Spot and Spot Size
 - Tube Voltage and tube current.
6. **Attempt any *one* part of the following:** **10x1=10**
- Define Ultrasonic testing. How this testing can help in medical diagnosis and inspecting welded joint.
 - Discuss in detail about ultra sonography of human body. Mention advantages and disadvantages of ultrasonic testing with some applications.
7. **Attempt any *one* part of the following:** **10x1=10**
- What are the factors which effects eddy current testing? Discuss the eddy current flow characteristics with neat diagram.
 - Discuss the different types of Probe used in eddy current testing with neat diagram.

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