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**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**

- a. Enlist any five devices used for visual inspection test.
- b. Define contrast ratio and contrast sensitivity.
- c. What is dwell time?
- d. What is skin effect?
- e. What do you mean by nature of radiation?
- f. Define Bragg's Law.
- g. What is Attenuation?
- h. Define Snells law.
- i. Which type of probe is used to inspect the inside diameter of a bore?
- j. Define Lenz's Law.

**SECTION B****2. Attempt any three of the following: 10x3=30**

- a. What are defects? Discuss any three casting, welding and forging defects which can only be detected by the NDT methods.
- b. What are the properties the penetrants must have in order to work well? Classify Different types of penetrants.
- c. 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.
- d. With neat sketch explain the method of ultrasonic testing and write its applications, advantages and disadvantages.
- e. 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**

- a. Discuss about machine vision technology used in visual inspection method. Differentiate between Manual and Automated inspection method.
- b. Write short notes on the following:
  - i. Oil Whitening Test
  - ii. Hammer Test

**4. Attempt any one part of the following: 10x1=10**

- a. What are various methods of magnetization of a ferromagnetic material? Discuss any two of them with neat diagram.
- b. What are the standards applicable to liquid penetrant testing? Write short notes on Leak test and Zygo penetrant test.



5. Attempt any *one* part of the following: 10x1=10
- a. Describe in detail about Rayleigh's scattering and Compton's scattering with neat diagram.
  - b. Write short notes on the following.
    - (i) Cooling of anode (ii) Focal Spot and Spot Size (iii) Tube Voltage and tube current.
6. Attempt any *one* part of the following: 10x1=10
- a. Define Ultrasonic testing. How this testing can help in medical diagnosis and inspecting welded joint.
  - b. 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
- a. What are the factors which effects eddy current testing? Discuss the eddy current flow characteristics with neat diagram.
  - b. Discuss the different types of Probe used in eddy current testing with neat diagram.