

**IV B.Tech I Semester Supplementary Examinations, April/May 2005**  
**NDT METHODS**  
**(Metallurgy & Material Technology)**

**Time: 3 hours**

**Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. (a) Discuss the direct and indirect visual techniques of NDT. What are the applications of visual inspection?  
(b) What are the applications of optical holography? Describe the optical holographic equipment.
2. (a) What is the significance of liquid penetrant test? Critically discuss the general procedure involved in liquid penetrant test.  
(b) Explain the selection process and equipment for penetrant testing. What are its applications?
3. (a) Discuss the principles of radiography. What are the advantages and disadvantages of radiography? What are the sources of g-radiation?  
(b) How are X-rays generated? What are the characteristics of X-rays? What are the applications of gamma rays?
4. (a) Discuss the Fluoroscopic methods. What are the effects of radiation?  
(b) Describe the techniques used for radiographic imaging.
5. (a) How are Ultrasonic waves generated? Discuss the general ultrasonic beam characteristics.  
(b) Elaborate the ultrasonic testing techniques.
6. (a) How are the magnetic fields generated? Explain the techniques used for magnetization.  
(b) Discuss the magnetic flux leakage detection method.
7. (a) Discuss the principle of eddy current testing. What are the characteristics of the eddy current method? Which of the parameters affect the phase relationships of coil voltage and current?  
(b) Describe the eddy current equipment and various testing techniques.
8. Write a brief account of the following:
  - (a) Ultrasonic equipment and systems.
  - (b) Magnetization techniques.
  - (c) Fluoroscopy and radiography.

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