

B.E./B.TECH. Degree Examination, September 2020

Semester - VIII

**ME16022 NON DESTRUCTIVE TESTING AND MATERIALS**

(Regulation 2016)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions**PART A - (8 X 2 = 16 marks)**

1. Which of the following is related to liquid penetrant testing?  
Developer  
Coupling  
Half life  
None of the above
2. The magnitude and distribution of eddy current in a given conductor is influenced by  
Magnitude of the primary magnetic field  
Geometric variations  
Magnetic coupling  
All the above
3. Which of the following are the properties of X-Ray  
They move in straight lines  
They cannot be deflected  
They pass through matters  
All the above
4. A transducer in ultrasonic testing is not characterized by  
Electro-mechanical coefficient  
Film density  
Quality factor  
Sensitivity
5. Distinguish between dry and wet method of magnetic particle testing.
6. State the functions of sensing element in eddy current testing.
7. Brief the use of radiographic screens in radiography.
8. Brief piezoelectric effect of transducers in ultrasonic testing.

**PART B - (4 X16 = 64 marks)**

09. (a) (i) Enumerate and discuss the process of liquid penetrant testing with a neat flow chart. **(16)**  
**(OR)**  
(b) (i) Classify and describe various magnetizing techniques available in magnetic particle testing with neat diagrams. **(16)**
10. (a) (i) Describe about the surface inspection probes used in eddy current testing. **(10)**  
(ii) Enumerate the applications of eddy current testing. **(6)**  
**(OR)**  
(b) (i) Describe the principle of direct contact type thermography method. **(8)**  
(ii) Enumerate the applications of thermography. **(8)**
11. (a) (i) Discuss about the principle of fluoroscopy. **(8)**  
(ii) Discuss about the types and applications of radiographic films. **(8)**  
**(OR)**  
(b) (i) Discuss about Xero-Radiography with a neat diagram. **(8)**  
(ii) Enumerate the importance of penetrameters in radiography. **(8)**
12. (a) (i) Discuss about the features of an ultrasonic pulse-echo system with a neat block diagram. **(16)**  
**(OR)**  
(b) (i) With a neat diagram describe the procedure of time of flight diffraction ultrasonic technique. **(8)**  
(ii) Enumerate in detail about the applications of acoustic emission technique. **(8)**