

**B.Tech. – VIEP – MECHANICAL ENGINEERING
(BTMEVI)**

Term-End Examination

June, 2016

00476

BIMEE-011 : NON-DESTRUCTIVE TESTING

Time : 3 hours

Maximum Marks : 70

Note : Attempt any five questions. All questions carry equal marks.

1. (a) Describe the role of non-destructive testing techniques in modern production. 7
- (b) Explain the demagnetization process, giving its role and significance, which is used after magnetic particle test. 7

2. (a) What safety measures would you consider as precautions against radiation hazards ? Explain. 7
- (b) Discuss the advantages of Gamma-ray (γ -ray) radiography over X-ray radiography. 7

3. (a) Describe in brief the equipments used for visual inspection for NDT. 7
- (b) Explain the use of piezoelectricity and magnetostriction in non-destructive testing techniques. 7
4. (a) Describe the eddy current inspection method with the help of a neat diagram. 7
- (b) Discuss in detail the advantages of multi-frequency eddy current testing over simple eddy current testing. 7
5. (a) Surface cracks and surface discontinuities are to be inspected. Which best non-destructive method would you suggest ? Explain the method for inspecting these defects. 7
- (b) Briefly describe the following defects : 7
- (i) Scab
 - (ii) Porosity
 - (iii) Inclusion
6. (a) Describe in brief the advantages, limitations and typical applications of ultrasonic testing methods. 7
- (b) Explain the use of shape memory alloys for non-destructive testing. 7

7. Write short notes on the following :

$$4 \times 3 \frac{1}{2} = 14$$

- (a) Structural Health Monitoring
 - (b) Piezoelectricity
 - (c) Types of Casting Defects
 - (d) Dye Penetrant Test
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