

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

00616 Term-End Examination
June, 2015

BIMEE-011 : NON-DESTRUCTIVE TESTING

Time : 3 hours

Maximum Marks : 70

Note : Attempt any five questions. Each question carries equal marks.

1. (a) Which type of defects can be detected by visual inspection ? Discuss. Briefly describe the use of Borescope and Endoscope in visual inspection. 8
- (b) Briefly describe the common sub-surface and surface defects. 6
2. (a) Briefly explain the use of penetrants, cleaners, emulsifiers and developers at various stages of liquid penetrant testing. Give the names of commonly used materials in these categories. 9
- (b) Discuss the significance of initial demagnetization, degreasing and cleaning of the component before magnetic particle testing. 5

3. (a) Briefly discuss the demagnetization methods that are applied post magnetic particle tests. 7
- (b) Make a comparative study on the use of liquid penetrant testing and magnetic particle testing. 7
4. (a) Discuss the various components of an Eddy Current Test (ECT) instrument. 7
- (b) Describe in brief the different types of probes used in ECT. 7
5. (a) Compare X-ray and Gamma ray radiography. 7
- (b) Briefly discuss the various radiographic inspection techniques available for specific applications with regard to geometry, size and sensitivity of the component. 7
6. Write short notes on any *four* of the following : $4 \times 3 \frac{1}{2} = 14$
- (a) Safety in industrial radiography
- (b) Different types of equipments used for magnetic particle testing
- (c) Pulsed eddy current testing
- (d) Different types of ultrasonic probes
- (e) Common casting defects
7. (a) Classify the different ultrasonic test procedures. Discuss any one of them in brief. 7
- (b) Discuss the applications, advantages and limitations of ultrasonic testing. 7