

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

**00265**      **Term-End Examination**  
**December, 2014**

**BIMEE-011 : NON-DESTRUCTIVE TESTING**

*Time : 3 hours*

*Maximum Marks : 70*

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

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1. (a) Make a comparative study of destructive and non-destructive testing based on advantages and limitations. 7
  - (b) Briefly discuss the different optical aids used for visual inspection. 7
  
  2. (a) Briefly describe the following defects : 6
    - (i) Inclusions
    - (ii) Blow holes
    - (iii) Pin holes
    - (iv) Porosity
  - (b) Describe the physical principles based on which the liquid penetrant testing is performed. 4
  - (c) State the step-by-step procedure for liquid penetrant testing. 4

3. (a) Describe ferromagnetism, para-magnetism and magnetic hysteresis. 6
- (b) Briefly discuss the various methods which can be used for magnetization during magnetic particle testing. 8
4. (a) Give the advantages and limitations of magnetic particle testing. 4
- (b) Describe the principle of eddy current testing. Which parameters affect the eddy currents? Discuss. 7
- (c) Discuss the effect of test frequency on the test results. 3
5. (a) Briefly explain the different electromagnetic sources of radiation which are used in radiography. 9
- (b) Briefly discuss radiographic sensitivity. 5
6. (a) Discuss the role of Piezo-electricity and Magneto-striction in the ultrasonic testing. 8
- (b) Mention the specific applications of ultrasonic testing. Discuss its use in leak detection. 6
7. Write short notes on the following :  $4 \times 3 \frac{1}{2} = 14$
- (a) Different types of weld defects
- (b) Different types of extrusion defects
- (c) Different types of casting defects
- (d) Selection of non-destructive test method for specific applications
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