

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

Term-End Examination

June, 2014

00734

BIMEE-011 : NON-DESTRUCTIVE TESTING

Time : 3 hours

Maximum Marks : 70

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

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1. (a) Surface micro - cracks and subsurface discontinuities are to be inspected. Which best non - destructive method do you suggest ? Explain it for inspecting these defects. 7
- (b) Briefly describe the following defects : 7
- (i) Blow holes
- (ii) Pin holes
- (iii) Porosity
- (iv) Inclusions
2. (a) List all types of discontinuities that can be inspected using magnetic particle tests. Also mention those which can not be inspected using this test. Give guidelines to help interpret the results of this test. 9
- (b) Briefly discuss Holography. 5

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| 3. | (a) | List the testing materials used in "post - emulsifiable" method of liquid penetrant testing. Also mention significance of testing materials vis - a - vis type of discontinuity. | 8 |
| | (b) | Explain the demagnetization process giving its significance which is used after magnetic particle test. | 6 |
| 4. | (a) | Explain multifrequency eddy current testing. What are its advantages over simple eddy current testing ? | 9 |
| | (b) | Describe principle of magneto - optic / eddy current imaging. | 5 |
| 5. | (a) | Compare and contrast X - Ray and Gamma Rays in radiographic inspection. | 7 |
| | (b) | Describe all the factors that affect the radiographic image features. | 7 |
| 6. | (a) | Compare and contrast "Normal incident pulse - echo inspection" and "Normal incident through Transmission Testing". | 9 |
| | (b) | Briefly discuss interpretation of inclusions, slag and porosity during ultrasonic testing. | 5 |
| 7. | | Write short notes (on any three of the following) : | 14 |
| | (a) | Testing of Hydrogen embrittlement by ultrasonic method | |
| | (b) | Latitudinal radiographic inspection techniques | |
| | (c) | Pulsed eddy current testing | |
| | (d) | Contact current - flow method of magnetic testing | |
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