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BIMEE-011

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

00052

Term-End Examination

December, 2017

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) Make a comparative study of destructive and non-destructive testing based on advantages and limitations. 7

2. (a) Briefly discuss the different optical aids used for visual inspection. 7

(b) Briefly describe the common sub-surface and surface defects. 7

3. (a) Discuss in brief, the demagnetization methods that are applied post magnetic particle tests. 7

(b) Discuss the advantages and limitations of the magnetic particle inspection technique. 7

4. (a) Make a comparative study on the use of liquid penetrant testing and magnetic particle testing. 7

(b) Discuss the advantages of Gamma-ray (γ-ray) over X-ray radiography. 7

5. (a) What safety measures would you consider as precautions against radiation hazards ? Explain. 7

(b) Briefly explain the different redundant sources of radiation which are used in radiography. 7

6. (a) Discuss the role of Piezoelectricity and Magnetostriction in ultrasonic testing. 7

(b) Mention the specific applications and limitations of ultrasonic testing. Discuss its use in leak detection. 7

7. (a) Describe the principle of eddy current testing. Which parameters affect the eddy currents ? Discuss. 7

(b) Describe the physical principles based on which liquid penetrant testing is performed. 7

8. Write short notes on any ***four*** of the following : $4 \times 3\frac{1}{2} = 14$

(a) Flaws and Defects

(b) Zyglo Test

(c) Skin Effect

(d) Rayleigh's Scattering

(e) Scattering Factor

(f) Magna Glow Testing