No. of Printed Pages : 3 **BIMEE-011**

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

Term-End Examination

00694

June, 2018

BIMEE-011 : NON-DESTRUCTIVE TESTING

Time : 3 hours *Maximum Marks : 70*

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

1. (a) Why is non-destructive testing required ? Discuss in detail. 7

(b) Which type of defects can be detected by visual inspection ? Briefly describe the use of Borescope and Endoscope in visual inspection. 7

2. (a) Which NDT technique is best suited for testing surface and subsurface discontinuities ? Explain it in detail. 7

(b) Describe the procedure for liquid penetrant testing. 7

3. (a) Briefly discuss the various methods which can be used for magnetization during magnetic particle testing. 7

(b) Write the advantages, applications and limitations of magnetic particle testing. 7

4. (a) Briefly discuss the various radiographic inspection techniques available for specific applications with regard to geometry, size and sensitivity of the component. 7

(b) Describe the procedure for Magna glow testing. 7

5. (a) Compare and contrast X-rays and Gamma rays in radiographic inspection. 7

(b) Discuss the significance of initial demagnetization, degreasing and cleaning of the component before magnetic particle testing. 7

6. (a) Describe in detail the ultrasonic flaw-detection process of NDT. 7

(b) How can photoelectric effect be used as a non-destructive testing technique ? Explain with the help of a neat diagram. 7

7. (a) Describe the Eddy current inspection method with the help of neat diagram. 7

(b) How are surface cracks and surface discontinuities to be inspected ? Explain. 7

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

(a) Ringing test and Chalk test

(b) Leak Testing

(c) Ferro and Non-Ferro Magnetic Materials

(d) Precautions against radiation hazards

(e) CRO Techniques

(f) Ultrasonography of the Human Body