



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Seventh Semester, B.E. – Automobile Engineering

Semester End Examination; Dec - 2016/Jan - 2017

Non-Destructive Testing

Time: 3 hrs

Max. Marks: 100

Note: i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.

ii) Figures/ Sketches are to be drawn using pencil only.

UNIT - I

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| 1a. | Explain the advantages and limitations of Destructive tests and Non-Destructive tests. | 10 |
| b. | Describe the importance of Leak testing and the different Leak testing methods. | 10 |
| 2 a. | Explain the procedure for testing a component using Magnetic particle testing. | 10 |
| b. | Explain any two magnetizing techniques. | 10 |

UNIT - II

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| 3 a. | Explain the factors which affect eddy current. | 10 |
| b. | Explain the inspection of Heat exchanger tubes by single frequency Eddy current Testing system. | 10 |
| 4 a. | Explain principle of operation, measurement technique, data collection and image creation in microwave inspection. | 10 |
| b. | Explain the applications and limitations of microwave inspection. | 10 |

UNIT - III

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| 5 a. | Explain briefly about velocity of Ultrasonic waves and behavior of Ultrasonic waves. | 10 |
| b. | Explain the Ultrasonic testing for Fatigue cracks and thickness measurement of pressure vessels. | 10 |
| 6 a. | Explain the different modes of display in Ultrasonic Testing. | 10 |
| b. | Define the following : | |
| | i) Longitudinal waves ii) Traverse waves iii) Shear waves | 10 |
| | iv) Acoustic impedance v) Immersion testing. | |

UNIT - IV

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| 7 a. | With neat sketch, explain the principle of Radiographic examination. | 10 |
| b. | Explain about Radiographic sensitivity. | 10 |
| 8 a. | Explain briefly about Image quality indications. | 10 |
| b. | Define the following : | |
| | i) Intensifying screens ii) Film screens iii) Film Density | 10 |
| | iv) Neutron Radiography v) Radiation Monitoring v) Gamma Ray. | |

UNIT - V

- 9 a. Explain the types of Holograms. 10
- b. Explain basic principle of optical holography and its applications. 10
- 10 a. Explain briefly about principle and applications of Acoustical holography. 10
- b. A reflection hologram is made with red laser light. However when illuminated with white light, the image appears yellow or even green. Why? 10

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