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

(An Autonomous Institution affiliated to VTU, Belgaum)

Seventh Semester, B.E. - Mechanical 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) Assume suitably missing data, if any.

UNIT - I

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|------|---|----|
| 1 a. | Discuss the advantages and area of applications of NDT methods. | 10 |
| b. | Explain with neat sketch, working of flexible Bore scope. | 10 |
| 2 a. | Define Flaw. Explain different types of Flaws. | 6 |
| b. | With a neat sketch, explain liquid penetrant test. | 10 |
| c. | List out the advantages of fluid penetrant test. | 4 |

UNIT - II

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|------|--|----|
| 3 a. | Explain working principle of Real Time Radiography. | 10 |
| b. | Briefly explain magnetic particles and suspending liquids used in magnetic inspection. | 10 |
| 4 a. | With a neat sketch, explain the steps involved in magnetic particle inspection. | 10 |
| b. | Discuss the following with respect to Radiography : | 10 |
| | (i) X ray-sources (ii) Radiation hazard. | |

UNIT - III

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|------|---|----|
| 5 a. | Explain different types of Inspection coils used in Eddy current inspection method. | 12 |
| b. | With a neat sketch, explain the method of Holographic Re-construction. | 8 |
| 6 a. | Discuss the Interferometric techniques used in holography. | 10 |
| b. | With a neat sketch, explain the principle and procedure of Eddy current inspection. | 10 |

UNIT - IV

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|------|--|----|
| 7 a. | Explain working principle of 'A-scan setup' pulse-echo ultrasonic inspection. | 10 |
| b. | List out the advantages, limitations and applications of computed Tomography Inspection. | 10 |
| 8 a. | With a neat sketch, explain the working principle of computed Tomography. | 10 |
| b. | List out the advantages, limitations and applications of ultrasonic inspection. | 10 |

UNIT - V

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|------|--|----|
| 9 a. | With a neat sketch, explain the basic principle of acoustic emission inspection. Mention the advantages and disadvantages. | 10 |
| b. | Write a short note on contact and non-contact temperature sensors. | 10 |
| 10a. | Explain any two types of Thermal Inspection methods. | 10 |
| b. | Explain digital image enhancement system. | 6 |
| c. | Mention advantages and limitations of image processing. | 4 |