



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

(An Autonomous Institution affiliated to VTU, Belagavi)

Third Semester, B.E. - Industrial and Production Engineering

Semester End Examination; Dec - 2017/Jan - 2018

Mechanical Measurements

Time: 3 hrs

Max. Marks: 100

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

UNIT - I

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| 1 a. | Explain the principle of resistive transducers. | 10 |
| b. | With a neat sketch, explain briefly the working of Ionization transducers. Also list the various applications of it. | 10 |
| 2 a. | Describe briefly the various problems inherent in any mechanical intermediate modifying system. | 8 |
| b. | Describe briefly the general Telemetry system. With neat sketch, explain briefly the Telemetry transmitting and Receiving system. | 12 |

UNIT - II

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|------|---|----|
| 3 a. | Enumerate on the basic mechanism of a Mechanical counters. | 8 |
| b. | With neat sketch, explain the two types of oscillographs. | 12 |
| 4 a. | Write a note on proving ring. List out the applications of it. | 10 |
| b. | Describe briefly the working of a hydraulic dynamometer with a neat sketch. | 10 |

UNIT - III

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| 5 a. | Describe briefly the steps for proper mounting of the strain gauges. Also list out the desirable characteristics of Backing materials of strain gauges. | 10 |
| b. | Explain briefly the working of Tuckerman optical Extensometer. | 10 |
| 6 a. | Explain briefly the working principle of a Bonded Resistance strain-gauge and also explain the wire and foil type Resistance strain gauges. | 12 |
| b. | Write a note on Calibration of strain gauge. | 8 |

UNIT - IV

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| 7 a. | With a neat block diagram, explain briefly the various elements of vibration measurement system. | 12 |
| b. | With a neat sketch, explain briefly the working of a Piezoelectric accelerometer and list out the application of it. | 8 |
| 8 a. | Explain briefly the use of Elastic members in pressure measurements. | 12 |
| b. | With a neat sketch, explain briefly the operation of a McLeod gauge. | 8 |

UNIT - V

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| 9 a. | Explain briefly the working of an Electrical Resistance Thermometer with neat sketch. List out the desirable properties of resistance thermometer materials. | 12 |
| b. | Define Seebeck effect. Explain briefly the different laws of thermocouple. | 8 |
| 10 a. | With a neat sketch, describe the working of pressure thermometer. List the application of it. | 10 |
| b. | Describe with a neat sketch the optical pyrometer list out the application of it. | 10 |

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