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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 - 2019
Mechanical Measurements

Time: 3 hrs

Max. Marks: 100

Note: i) **PART - A** is compulsory. **Two** marks for each question.ii) **PART - B:** Answer any **Two** sub questions (from a, b, c) for Maximum of **18 marks** from each unit.

Q. No.	Questions	Marks
I : PART - A		10
I a.	Give one example of active and passive transducer.	2
b.	Mention any two force measuring devices.	2
c.	What are Unit strain and Total strain?	2
d.	What are static and dynamic pressures?	2
e.	What is the principle of a thermocouple?	2
II : PART - B		90
UNIT - I		18
2 a.	Describe briefly the working of an Ionization Transducer.	9
b.	Explain briefly the inherent problems associated with the mechanical intermediate modifying devices.	9
c.	With a neat block diagram, explain general telemetering system. Also discuss any two advantages and disadvantages.	9
UNIT - II		18
3 a.	“CRO is the most versatile read-out device for mechanical measurements”- Describe briefly its working principle with a neat sketch and list out its applications.	9
b.	Describe with a neat sketch the working of an equal arm balance.	9
c.	Explain briefly a typical hydraulic dynamometer.	9
UNIT - III		18
4 a.	Write a note on Bonded Resistance Wire strain gauge.	9
b.	With a neat sketch, explain the working of a Tuckerman Optical Extensometer.	9
c.	Describe the process of preparation and mounting of strain gauges.	9
UNIT - IV		18
5 a.	Describe with a neat sketch the working principle of a piezoelectric accelerometer.	9
b.	Explain with neat sketches the use of elastic members in pressure measurement.	9
c.	Enumerate on the working principle of a McLeod gauge.	9

UNIT - V

18

- 6 a. Explain the different types of electrical resistance thermometers and what are the desirable properties of resistance-thermometer materials? 9
- b. Enumerate on the Bimetallic Thermometers. Explain its working principle in detail and list the important properties a material to be selected for Bimetallic Thermometers. 9
- c. Describe the construction and working principle of Optical Pyrometer. 9

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