U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

May 2023 Semester End Main Examinations

Programme: B.E. **Semester: III**
Branch: Electronics and Instrumentation Engineering **Duration: 3 hrs.**
Course Code: 22EI3PCSMT **Max Marks: 100**
Course: Sensors and Measurement Techniques **Date: 19.05.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1 a) With the help of neat block diagram, explain the working of different blocks of the general measurement system. **08**

b) Explain the classification of static errors in measurement. **08**

c) Define the following with respect to measuring instrumentation **04**
   i) Speed of response
   ii) Sensitivity
   iii) Damping Factor
   iv) Linearity

UNIT - II

2 a) Draw the construction of LVDT and show how its construction and operation helps in measuring displacements electronically. **10**

b) With suitable diagrams, explain how strain gauge is used for pressure measurement. **10**

OR

3 a) Discuss the physical principle of sensing to capacitance and magnetism. **10**

b) Describe the principle of Piezoelectric effect and Hall effect with suitable diagram and equations. **10**

UNIT - III

4 a) Explain the working of fiber-optic interferometric microphone with help of neat diagram. **10**

b) With the help of neat diagram, discuss how radiation is measured using scintillation detectors. **10**

OR

5 a) Justify with working principle, how Photo transistors are comparatively better than Photo diode. **10**

b) Describe the Chilled Mirror sensor and Light RH sensor functions of Optical hygrometer with suitable diagrams. **10**

UNIT - IV

6 a) Describe the significance of optical temperature sensors and Explain Fluoroptic and Interferometric sensors in detail. **10**

b) Explain the characteristics and operational principles of RTD and Thermistor **10**

UNIT - V

7 a) Illustrate the principle of two-wire 4-20mA analog data transmission control and monitor devices in the process industry **10**

b) Explain the Sources and coupling of transmitted noise. Justify how additive and multiplicative noise can be removed. **10**

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