

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

Autonomous Institute Affiliated to VTU

## September / October 2023 Supplementary Examinations

**Programme: B.E.**

**Branch: ELECTRONICS & INSTRUMENTATION ENGINEERING**

**Course Code: 19EI5PCTNI**

**Course: TRANSDUCERS & INSTRUMENTATION**

**Semester: V**

**Duration: 3 hrs.**

**Max Marks: 100**

**Date: 15.09.2023**

**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) Explain the methodology you use to measure the following parameters ? **09**
  - a. Moisture
  - b. Viscosity
  - c. Vibration
- b) Write a short note on the materials used for sensors . **04**
- c) With neat sketch explain any two application of sensors in automobiles. **07**

### UNIT - II

- 2 a) What do you mean by measurement of flow? List different types of flow meters existing? Give an example of each. **10**
- b) Explain the principle and working of Orifice plate and Venturi type flow meters. **10**

### UNIT - III

- 3 a) Explain the basic principle, operation and characteristics of Thermistors RTD? When would you select thermistor or RTD to measure temperature explain. **14**
- b) With a circuit diagram explain the lead wire compensation . **06**

### OR

- 4 a) Explain the principle and working of thermocouple? List the various types of thermocouples and their composition? **10**
- b) What is cold junction compensation? Why is it required? Explain with a neat circuit the cold junction compensation of Thermocouple. **06**
- c) List the various laws of thermocouples **04**

**Important Note:** Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

#### UNIT - IV

- |   |    |   |    |
|---|----|---|----|
| 5 | a) | Explain the principle and working of pressure transducers | 06 |
|   | b) | Explain the working of bourdon type pressure gauges.      | 14 |
|   |    | i) Bellows  |    |
|   |    | ii) capsules  |    |
|   |    | iii) Bourdon  |    |

#### UNIT - V

- |   |    |  |    |
|---|----|--|----|
| 6 | a) | Explain the measurement of Vacuum?   | 05 |
|   | b) | Make a comparison among different pressure transmitters.                             | 05 |
|   | c) | What is pressure transmitter? Explain the calibration of smart pressure transmitter. | 10 |

#### OR

- |   |    |   |    |
|---|----|---|----|
| 7 | a) | What is load cell? What are the different types of load cells available. Explain about one in detail. | 10 |
|   | b) | Write short notes on  | 10 |
|   |    | i) Hydraulic load cell  |    |
|   |    | ii) Electronic weighing system  |    |

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