

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY  
FOURTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), MAY 2019**

**Course Code: AE204**

**Course Name: SENSORS AND TRANSDUCERS (AE)**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer any two full questions. Each question carries 15 marks*

- 1 a) With example, illustrate the necessity of secondary transducer in a measurement system. (5)
- b) Explain the principle of operation of LVDT with neat diagrams. (7)
- c) Distinguish between active and passive transducers. (3)
- 2 a) What is a strain gauge? Derive the expression for gauge factor. (7)
- b) Differentiate a sensor from a transducer. (3)
- c) With schematic diagram, explain a capacitive transducer for measurement of distance (5)
- 3 a) Explain loading effect in a resistance transducers. (6)
- b) Define i) resolution ii) linearity (4)
- c) List the different types of transducers based on transduction principle. (5)

**PART B**

*Answer any two full questions. Each question carries 15 marks*

- 4 a) With suitable diagrams, Explain the working of (8)
  - i) U- Tube Manometer
  - ii) Well type Manometer
- b) Explain a typical Sound level meter with a block diagram. (7)
- 5 a) Discuss the use of proving ring type load cell for the measurement of force. (4)
- b) What is dead weight calibrator? Give its significance in measurements systems. (7)
- c) Explain the working of a pneumatic load cell. (4)
- 6 a) Describe the constructional features and working of a Gyroscope (7)
- b) Explain two methods of level measurement. (8)

**PART C**

*Answer any two full questions. Each question carries 20 marks*

- 7 a) Define piezoelectric effect. Explain the working of piezoelectric transducers for measurement of pressure. (8)
- b) With suitable diagram, explain electromagnetic flow meter. (7)
- c) Write short notes on orifice flow meters. (5)
- 8 a) Explain any one method for torque measurement. (8)
- b) Define Hall effect. Explain any one application of Hall effect transducer. (8)
- c) State Bernoulli's principle. (4)
- 9 a) Describe the working of Eddy current transducers with any one application. (8)
- b) With schematic diagram explain i) rotameter ii) hot-wire anemometer (12)