APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST SEMESTER M. TECH DEGREE EXAMINATION

Electronics & Communication Engineering-Interdisciplinary Engineering

(Robotics & Automation)

04EC6907—Measurements and Sensors for Automation

Max. Marks : 60 Duration: 3 Hours

PART A

Answer All Questions

Each question carries 3 marks

1. Explain about the standards of measurement.
2. Define speed of response.
3. Distinguish between sensor and transducer with suitable examples.
4. State Bernoulli's theorem.
5. Explain purge method of measuring level.
6. Explain the basic principle of magnetostrictive transducers.
7. Define CMRR.
8. Explain surface micromachining.

PART B

Each question carries 6 marks

9. Define the terms accuracy, precision, resolution and sensitivity.

OR

10. Why is the linearity of an instrument an important specification? How is it expressed?

11. With the help of neat diagrams, explain the calibration setup for pressure gauge.

OR

12. Explain the compensation techniques used in thermocouple.

13. What is the difference between primary transducer and secondary transducer? Explain how the same transducer can be used as primary and secondary transducer in measurements.

OR

14. How a bath-tub curve associated with failures of transducers? What are the screening steps taken in standard silicon integrated sensors?
15. Explain, with the help of a diagram, the principle of operation of a McLeod gauge.

OR

16. Define piezoelectric effect. Explain the working of piezoelectric transducer for pressure measurement.
17. How can the capacitive transducer be used to measure the level of a conducting liquid?

OR

18. With the help of neat diagrams, explain the principle of Hall effect transducers.
19. Why is the dual slope integrating type A/D converter preferred for digital multimeter?

OR

20. What is a biosensor? Suggest an example of a biosensor and show how it is constituted for applications.