



Reg. No. :

Question Paper Code : 90409

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019
Third/Fifth Semester
Mechatronics Engineering
MT8591 – SENSORS AND INSTRUMENTATION
(Common to Robotics and Automation Engineering)
(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Define resolution.
2. What is meant by calibration ?
3. List the types of encoder.
4. Mention any two applications of potentiometer.
5. Define the relationship between stress and strain.
6. Mention the significance of Gyroscope.
7. Write the operating principle of photovoltaic sensor.
8. Abbreviate MEMS and LASER.
9. State the need for amplifiers in signal conditioning unit.
10. List the types of filters.

PART – B

(5×13=65 Marks)

11. a) Explain the various classifications of errors with an example.

(OR)

- b) Describe the static and dynamic characteristics of transducers with suitable example.

90409



12. a) Explain the construction, principle of operation and characteristics of LVDT with necessary sketch.

(OR)

- b) Write short notes on :

- i) RF beacons
- ii) RVDT.

13. a) Explain the construction, types, operation and applications of strain gauge.

(OR)

- b) Explain the requirement and operating principle of hall effect and inclinometers sensors.

14. a) Illustrate the construction and principle of operation of pressure sensors with necessary sketch.

(OR)

- b) Draw and explain any two type of liquid level measurement with suitable sketch.

15. a) Draw and illustrate the operation of sample and hold circuits and also write its applications.

(OR)

- b) Draw the block diagram of multichannel data acquisition system and write its operation.

PART – C

(1×15=15 Marks)

16. a) Assume a temperature system along with some specification and justify the selection of suitable temperature sensor for measuring the same with data acquisition system.

(OR)

- b) Illustrate the sensor and data acquisition system requirement of typical home security system with necessary diagram and justification.