

Register No: Name:



SAINTGITS COLLEGE OF ENGINEERING KOTTAYAM, KERALA

(AN AUTONOMOUS COLLEGE AFFILIATED TO
APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FIRST SEMESTER M.TECH. DEGREE EXAMINATION (R), MARCH 2021 ROBOTICS AND AUTOMATION

Course Code: 20ECRAT107

Course Name: MEASUREMENTS AND SENSORS FOR AUTOMATION

Max. Marks: 60

Duration: 3 Hours

PART A

(Answer all questions. Each question carries 3 marks)

1. Define a) Dead zone b) Sensitivity
2. Differentiate direct and indirect calibration
3. What are the different types of transducers?
4. With suitable examples define force summing devices.
5. Illustrate working principle behind Buoyancy level measurement method.
6. Define polarization and what are its types.
7. Prepare a note on inverse transducers.
8. Explain the advantages of Micro Electro Mechanical sensors with one example.

PART B

(Answer one full question from each module, each question carries 6 marks)

MODULE I

9. With suitable examples show the classification of measuring instruments. Also quote the SI units for various engineering parameters. (6)

OR

10. State the main static characteristics of measuring instruments. (6)

MODULE II

11. Illustrate linear approximation of non-linear systems. (6)

OR

12. What are the different calibration procedures used in industry? (6)

MODULE III

13. Define the working principle of strain gauge and also derive the expression for gauge factor. (6)

OR

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14. Define a. Pneumatic displacement transducers (3)
b. Optical transducers (3)

MODULE IV

15. Differentiate 2 wire, 3 wire and 4 wire RTD. (6)

OR

16. Illustrate the working principle behind variable head flow meters. (6)

MODULE V

17. Define a. Limit switches (3)
b. Hall effect transducer (3)

OR

18. Write short notes on (a) Electrochemical Cell (3)
(b) Electro ceramics (3)

MODULE VI

19. Illustrate the working principle of servo operated manometer. (6)

OR

20. What are the main components for sensor signal conditioning? Explain each one with neat block diagram. (6)
