Register No.: ………………………   Name: …………………………………………………………..

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FIRST SEMESTER M.TECH DEGREE EXAMINATION (R), DECEMBER 2023
(MACHINE DESIGN)
(2021 Scheme)

Course Code :   **21MD105-B**

Course Name :   **Sensors for Industrial Applications**

Max. Marks :   **60**   **Duration: 3 Hours**

PART A
(Answer all questions. Each question carries 3 marks)

1. Explain active and passive sensors with suitable examples.
2. Differentiate between unbonded and bonded type strain gauge.
3. Explain the various criteria to select an industrial sensor.
4. Discuss the working of a sensor to monitor noise in a rotating machinery.
5. List any three applications of laser sensors.
6. Explain the working principle of acoustic emission sensor.
7. List the applications of radio frequency identification systems.
8. Explain any ONE automatic identification technique for shop floor control.

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

MODULE I

9. Explain the various classification of errors with an example.   (6)

OR

10. Describe the static and dynamic characteristics of sensors with suitable examples.   (6)

MODULE II

11. Explain the working principle and applications of photovoltaic sensor with a neat figure.   (6)

OR

12. With the help of a neat figure, explain any pneumatic sensor and mention its applications.   (6)

MODULE III

13. Draw the block diagram of multichannel data acquisition systems and explain its operation.   (6)

OR

14. Illustrate the sensor and data acquisition system requirement of a typical home security system with necessary diagram and justification.   (6)

MODULE IV

15. Explain the constructional details and working of RTDs.   (6)

OR

16. Explain the different sensor materials. Also discuss the criteria for selection of sensor materials.   (6)

MODULE V

17. With the help of a block diagram, explain an overall plant network architecture.   (6)

OR

18. Explain the working principle of fiber optic networks with its advantages and disadvantages.   (6)

MODULE VI

19. Differentiate between 1D and 2D barcodes.   (6)

OR

20. Describe the working principle of optical character recognition.   (6)

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