

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

**SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)**

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**THIRD SEMESTER M.TECH DEGREE EXAMINATION (Regular), FEBRUARY 2022****MECHANICAL ENGINEERING (MACHINE DESIGN)****(2020 Scheme)****Course Code : 20MEMDT221****Course Name: Sensors for Industrial Applications****Max. Marks : 60****Duration: 3 Hours****PART A***(Answer all questions. Each question carries 3 marks)*

1. Differentiate between active and passive sensing.
2. Explain the working principle of resistance strain gauge.
3. Enumerate the selection criteria of sensors for industrial applications.
4. Discuss the different sensor materials with its basic properties.
5. List the sources and applications of acoustic emission.
6. Explain laser sensors with its applications.
7. Briefly explain the working principle of OCR
8. List any three applications of RFID.

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

9. Define sensor. Classify the different types of sensors. (6)

**OR**

10. Discuss the various classification of errors with an example. (6)

**MODULE II**

11. Enumerate the principle of operation of LVDT with a suitable example. (6)

**OR**

12. Explain any pneumatic sensor with the help of a neat figure and mention its applications. (6)

**MODULE III**

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

**OR**

14. Explain the techniques involved in condition monitoring of manufacturing systems. (6)

**MODULE IV**

15. Explain with an example, how is static pressure measured in aerospace studies. (6)

**OR**

16. Define thermal sensor. Classify with details of various temperature sensors. (6)

**MODULE V**

17. Enumerate how the sensor network is used to detect machinery faults. (6)

**OR**

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

**MODULE VI**

19. With the help of block diagram, explain automatic identification techniques for shop floor control. (6)

**OR**

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

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