

CBCS SCHEME

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21MT653

Sixth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025 Mechatronics Engineering

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain open loop system and closed loop system with an example. (10 Marks)
- b. Illustrate Automatic car park system with a neat diagram. (10 Marks)

OR

- 2 a. Explain elements of Mechatronics system with a neat diagram. (10 Marks)
- b. Illustrate the working of Automatic washing machine. (10 Marks)

Module-2

- 3 a. Explain the working of Linear Variable Differential Transformer (LVDT). Also discuss the advantages and disadvantages of LVDT. (10 Marks)
- b. Define a sensor. Discuss the classification of sensors. (10 Marks)

OR

- 4 a. Explain the working principle of strain gauge. (10 Marks)
- b. Explain the construction and working of capacitive transducer. List the advantages and disadvantages of capacitive transducer. (10 Marks)

Module-3

- 5 a. Define signal conditioning. Explain the process adopted in signal conditioning. (10 Marks)
- b. Demonstrate the basic components of SCADA system. (10 Marks)

OR

- 6 a. Explain data logger system with a neat block diagram. (10 Marks)
- b. Discuss the components used in analog to digital conversion. (10 Marks)

Module-4

- 7 a. Explain the working principle of solenoid and also discuss the types of solenoids. (10 Marks)
- b. Discuss the basic structure of PLC with a block diagram. (10 Marks)

OR

- 8 a. Explain brushless DC motor with a neat diagram. (10 Marks)
- b. Discuss the different types of DC programming language. (10 Marks)

Module-5

- 9 a. Explain the design process of mechatronics system with a neat diagram. (10 Marks)
- b. Explain the mechatronics involved in an automatic car park barrier. (10 Marks)

OR

- 10 a. Explain the mechatronics involved in a pick and place robot. (10 Marks)
- b. Explain the key elements of mechatronics. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.