



CBCS SCHEME

21ME653

Sixth Semester B.E./B.Tech. Degree Examination, June/July 2025 Mechatronics

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Define Mechatronics. Explain with an example elements of measurement system. (07 Marks)
- b. Explain with block diagram, basic elements of a closed-loop control system. (08 Marks)
- c. List the requirements and types of a control system. (05 Marks)

OR

- 2 a. Illustrate working of potentiometer and LVDT. (07 Marks)
- b. Explain capacitance sensors and temperature sensors. (08 Marks)
- c. Comparison between Transducer and Sensor. (05 Marks)

Module-2

- 3 a. Explain Data Acquisition System (DAQS). (07 Marks)
- b. Explain in detail Supervisory Control and Data Acquisition (SCADA). (08 Marks)
- c. Explain briefly Registers and Capacitors. (05 Marks)

OR

- 4 a. Explain briefly stepper motor. (07 Marks)
- b. Explain DC brushless motors with field coils with a neat sketch. (08 Marks)
- c. Explain Pulse Width Modulation (PWM). (05 Marks)

Module-3

- 5 a. With a neat block diagram, explain different components and its functionalities of micro controller. (07 Marks)
- b. List and explain basic elements of control system. (08 Marks)
- c. Differentiate between micro processor and microcontroller. (05 Marks)

OR

- 6 a. With a neat sketch explain architectures of Intel's 8085 microprocessor. (07 Marks)
- b. What is Micro Controller? Explain the classification of micro controller. (08 Marks)
- c. Define Microprocessor and explain briefly. (05 Marks)

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.

Module-4

- 7 a. Sketch and explain basic structure of Programmable Logic Controller (PLC). (07 Marks)
b. Write short notes on shift registers and Tump control. (08 Marks)
c. Explain the criteria that need to be considered for selection of a Programmable Logic Control (PLC). (05 Marks)

OR

- 8 a. Explain the control of two pneumatic piston, with a neat sketch. (07 Marks)
b. Explain the control of conveyormotor, with a neat sketch. (08 Marks)
c. Write short notes on Timers with a ladder diagram. (05 Marks)

Module-5

- 9 a. Explain construction and working of any one linear motion guide ways with neat sketch. (07 Marks)
b. With block diagram, explain elements of open loop and closed loop control system. (08 Marks)
c. With block diagram, explain adaptive control for machine tools with constraints. (05 Marks)

OR

- 10 a. Explain the stage of design process. (07 Marks)
b. Explain the comparison between traditional and mechatronics design concepts. (08 Marks)
c. Explain any one case studies of mechantronic systems. (05 Marks)

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