



Seventh Semester B.E. Degree Examination, June/July 2023
Mechatronics

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain with block diagram elements of mechatronics. (07 Marks)
- b. Explain with neat sketch working of Antilock Braking System (ABS). (08 Marks)
- c. With an example, explain components of measurement system. (05 Marks)

OR

- 2 a. Illustrate working of potentiometer and LVDT. (07 Marks)
- b. Explain principle of working of Hall Effect sensor with an example. (08 Marks)
- c. Comparison between the transducer and sensor. (05 Marks)

Module-2

- 3 a. With neat sketch, explain the process of analog to digital conversion. (06 Marks)
- b. Explain the working capacitive filter. (06 Marks)
- c. Explain the importance of supervisory control and data acquisition (SCADA) in current day industries. (08 Marks)

OR

- 4 a. Explain with neat sketch working of solenoids. (06 Marks)
- b. With neat sketch explain working of variable reluctance stepper motor. (06 Marks)
- c. Explain the components and working of DC servo motor. (08 Marks)

Module-3

- 5 a. With block diagram, explain different components and its functionalities of microcontroller. (09 Marks)
- b. List and explain basic elements of control system. (06 Marks)
- c. Differentiate between microprocessor and microcontroller. (05 Marks)

OR

- 6 a. With neat sketch, explain architecture of Intel's 8085 microprocessor. (10 Marks)
- b. Explain the process of Fetch cycle in INTEL 8085 microprocessor. (05 Marks)
- c. Explain the functioning of interrupts in 8085 microprocessor. (05 Marks)

Module-4

- 7 a. With block diagram, explain components and working of basic PLC structure. (08 Marks)
- b. Outline the guidance for selection of PLC for an application. (07 Marks)
- c. Draw and explain ladder diagram for temperature control system. (05 Marks)

OR

- 8 a. Draw ladder diagram and explain extending and retraction of pneumatic piston using latches. (09 Marks)
- b. Explain the control of conveyer motor with ladder diagram. (07 Marks)
- c. Explain with ladder diagram working of internal relay. (04 Marks)

Module-5

- 9 a. Explain construction and working of any one linear motion guideway with neat sketch. (07 Marks)
- b. With neat sketch, explain working of hydro-dynamic bearing used in CNC machines. (05 Marks)
- c. With block diagram, explain Adaptive Control for machine tools with constraints. (08 Marks)

OR

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- 10 a. With block diagram, explain elements of closed loop control system. (05 Marks)
- b. How mechatronics design process adopts multi-disciplinary approach in design process? Explain. (08 Marks)
- c. List components of pick and place Robot and explain design consideration made while selecting each component. (07 Marks)
