

CBCS SCHEME

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15ME753

Seventh Semester B.E. Degree Examination, Jan./Feb. 2021 Mechatronics

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Define mechatronics. Explain the difference between conventional approach and mechatronic approach. (08 Marks)
b. List the objectives, advantages and disadvantages of mechatronics. (08 Marks)

OR

- 2 a. Explain the principle of capacitive proximity sensor. (08 Marks)
b. What is "Hall Effect"? Explain with a neat simple sketch the principle of Hall effect. (08 Marks)

Module-2

- 3 a. Explain with a block diagram the organization of microprocessor. Explain in brief the function of each element in it. (10 Marks)
b. What is a microcontroller? Explain the classification of microcontrollers. (06 Marks)

OR

- 4 a. Define the following terms: (06 Marks)
(i) Data width (ii) RAM (iii) ROM (iv) Read cycle (v) Write cycle (vi) Interrupts
b. What are buses? Explain the different types of buses. (10 Marks)

Module-3

- 5 a. Explain briefly basic structure of Ladder logic diagram. (08 Marks)
b. Explain various requirements for selecting a Programmable Logic Controller. (08 Marks)

OR

- 6 a. Define PLC. Explain with a neat diagram working of a PLC. (08 Marks)
b. Explain briefly functional requirement of robot. (08 Marks)

Module-4

- 7 a. Explain the mechanical actuation system with examples. (03 Marks)
b. What is the principle of a solenoid? What are the two basic types of Solenoid? Explain the working of any one of them. (10 Marks)
c. What are the types of motion any rigid body? (03 Marks)

OR

- 8 a. Explain with circuit diagram and characteristics of curves, shunt wound d.c. motor. (06 Marks)
b. Explain with a neat diagram the working of a permanent magnet stepper motor to achieve step rotation. (10 Marks)

Module-5

- 9 a. With neat sketch, explain the construction of the hydraulic system. (10 Marks)
b. Explain with a neat diagram the working of a
(i) single acting cylinder (ii) double acting cylinder. (06 Marks)

OR

- 10 a. Explain with neat diagram the construction and working of an external gear motor. (08 Marks)
b. With neat sketch, explain pressure relief valve. (08 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.