

# CBCS SCHEME



15ME753

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

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: (i) Data width (ii) RAM (iii) ROM (iv) Read cycle (v) Write cycle (vi) Interrupts (06 Marks)
- 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.