

# CBCS SCHEME

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15ME753

## Seventh Semester B.E. Degree Examination, Dec.2019/Jan.2020 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 any one application of the mechatronic system with neat sketch. (08 Marks)  
b. List the objectives, advantages and disadvantages of mechatronics. (08 Marks)

OR

- 2 a. Illustrate a typical sensor showing transducer and signal conditioning unit. (08 Marks)  
b. What is Hall effect? Explain the hall effect with neat sketch. (08 Marks)

### Module-2

- 3 a. What are micro-controllers? Distinguish between a microprocessor and microcontrollers. (06 Marks)  
b. Explain with a neat sketch the internal architecture of Intel 8085 microprocessor. (10 Marks)

OR

- 4 a. Write a short note on 'BUS' related to 8085 microprocessor. (08 Marks)  
b. Define the following terms with respect to microprocessor:  
i) Fetch cycle ii) Accumulator iii) Interrupts iv) Stack pointer. (08 Marks)

### Module-3

- 5 a. Define programmable logic controller. Briefly explain external structure of PLC. (12 Marks)  
b. Enlist applications of programmable logic controllers. (04 Marks)

OR

- 6 a. Mention the different parts of a robot and briefly explain any three parts of a robot. (08 Marks)  
b. Explain functional requirement of robot. (08 Marks)

### Module-4

- 7 a. With neat sketch explain the Ratchet and power mechanism. (08 Marks)  
b. List the applications of cams in mechanical actuations. (04 Marks)  
c. Explain the method of transmitting power between two shafts. (04 Marks)

OR

- 8 a. List the mechanical switch classification and explain any one in detail. (08 Marks)  
b. Explain with neat sketch permanent magnet stepper motor. (08 Marks)

### Module-5

- 9 a. List classification of direction control valves used as fluid flow system. (04 Marks)  
b. List the advantages of hydraulic system. (02 Marks)  
c. With neat sketch, explain the construction details of hydraulic system. (10 Marks)

OR

- 10 a. With neat sketch explain pressure relief valve. (08 Marks)  
b. What are the types of rotary actuators and explain with sketches. (08 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.