

# CBCS SCHEME

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17ME753

## Seventh Semester B.E. Degree Examination, July/August 2021 Mechatronics

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

- 1 a. What is mechatronics? Draw the block diagram of basic elements of a mechatronic system. (06 Marks)  
b. Briefly explain about evolution of mechatronics. (06 Marks)  
c. List out the objectives, advantages, disadvantages and applications of mechatronics. (08 Marks)
- 2 a. Define sensor and transducer. Briefly explain Eddy current proximity sensor with a neat sketch. (10 Marks)  
b. Explain Hall effect transducer with a neat sketch. (10 Marks)
- 3 a. Explain basic elements of microprocessor based control system with a neat sketch. (10 Marks)  
b. Sketch and explain the architecture of Intel's 8085A microprocessor. (10 Marks)
- 4 a. Define the following terms:  
(i) Memory (ii) Address. (iii) I/O and peripheral devices (10 Marks)  
(iv) Assembler (v) Registers  
b. Briefly explain microprocessors and mention at least two differences between microprocessors and microcontrollers. (10 Marks)
- 5 a. What is PLC? Briefly explain the basic structure of PLC with a neat sketch. (10 Marks)  
b. Define ladder programming. Also explain ladder diagram with a neat sketch. (10 Marks)
- 6 a. Briefly explain advanced actuators with a neat sketch. (10 Marks)  
b. With a neat sketch, briefly explain functional requirements of robot. (10 Marks)
- 7 a. Briefly explain translation motion and rotational motion. (10 Marks)  
b. Explain Gear Ratio calculation with a neat sketch. (10 Marks)
- 8 a. Name any four important solid state switches and explain any one in detail. (10 Marks)  
b. Explain solenoids in detail. (10 Marks)
- 9 a. Briefly explain pressure relief valve with a neat sketch. (10 Marks)  
b. With a neat sketch, illustrate different valve actuator symbols for hydraulic and pneumatic systems. (10 Marks)
- 10 a. Write short notes on:  
(i) Check valve. (10 Marks)  
(ii) Needle valve. (10 Marks)  
b. Sketch and explain the working principle of a hydraulic system. (10 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.