

CBCS SCHEME

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15ME753

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019 Mechatronics

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. What is mechatronics? Brief evolution of mechatronics. (08 Marks)
b. Write short notes on: (i) Proximity switch (ii) Hall effect sensor (08 Marks)

OR

- 2 a. Define transducer and classify it. Sketch and explain capacitive transducer. (08 Marks)
b. Elaborate mechatronics a multidisciplinary scenario. State any two merits and demerits of mechatronics. (08 Marks)

Module-2

- 3 a. What is a Register? Sketch and explain Program Counter. (08 Marks)
b. Discuss the Basic Elements of Microprocessor based control system. (08 Marks)

OR

- 4 a. Sketch and explain a typical memory device of a microprocessor. (08 Marks)
b. List out any four differences between Microcontroller and Microprocessor. (08 Marks)

Module-3

- 5 a. Describe different parts of an Industrial fixed robot controller. (08 Marks)
b. Define PLC. Sketch and explain the Basic PLC structure. (08 Marks)

OR

- 6 a. Discuss the functional requirements of a robot and state how sensors play a vital role in functioning of robots. (08 Marks)
b. Write short notes on: (i) Pneumatic actuators (ii) Latching circuit (08 Marks)

Module-4

- 7 a. Sketch and explain the working principle of an variable reluctance Stepper motor and state the specification of it. (08 Marks)
b. Define the following and state any two application of it:
(i) RELAY (ii) SOLENOID (iii) MOSFETS (iv) MOTOR (08 Marks)

OR

- 8 a. Explain the construction of a Ratchart and Pawl Mechanisms. (08 Marks)
b. Draw and explain the types of belts used in belt drives for power transmission. (08 Marks)

Module-5

- 9 a. Sketch and explain the working principle of a Hydraulic system. (08 Marks)
b. What is Direction Control Valve? Explain the operations of a single solenojd valve. (08 Marks)

OR

- 10 a. With a neat sketch illustrate different valve actuator symbols for hydraulic and pneumatic systems. (08 Marks)
b. Write a note on spool valve. (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.