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## Seventh Semester B.E. Degree Examination, June/July 2023

### Mechatronics

Time: 3 hrs.

Max. Marks: 100

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

#### Module-1

- 1 a. Define mechatronics, briefly explain the various evaluation strategy. (08 Marks)  
b. State the merits and demerits of a mechatronics system. (08 Marks)  
c. Explain the design aspects of mechatronics discipline. (04 Marks)

OR

- 2 a. Define transducer, state the difference between a sensor and a transducer. (08 Marks)  
b. State and explain the hall effect sensor. (06 Marks)  
c. Mention and briefly explain the commonly used forms of a light sensor. (06 Marks)

#### Module-2

- 3 a. With block diagram, explain the basic elements of a closed loop control system. (12 Marks)  
b. Differentiate between microprocessor and micro controller. (08 Marks)

OR

- 4 a. With diagram, explain the configuration of Intel 8085A microprocessor. (14 Marks)  
b. Related to microprocessor explain with block diagram of BUS. (06 Marks)

#### Module-3

- 5 a. Briefly explain the two methods used for input or output processing in a programmable logic controller. (08 Marks)  
b. Draw a logic diagram for a situation where the output from the PLC is to energize a solenoid when a normally open start switch connected to the input is activated by being closed. (08 Marks)  
c. Mention the criteria considered in the selection of a PLC. (04 Marks)

OR

- 6 a. Mention and briefly explain the different parts of a robot. (14 Marks)  
b. Mention the main features of pneumatic actuators. (06 Marks)

#### Module-4

- 7 a. Explain the Ratchet and pawl mechanism. (08 Marks)  
b. Briefly explain the type of motions involved with mechanical systems. (06 Marks)  
c. Derive mechanism state the functions of mechanism in the mechatronic system. (06 Marks)

OR

- 8 a. Explain the working principle of a D.C. motor. (10 Marks)  
b. Describe the working of a relay. (10 Marks)

#### Module-5

- 9 a. With neat diagram explain pressure relief valve. (10 Marks)  
b. With sketch explain pressure reducing valve. (10 Marks)

OR

- 10 a. With neat diagram, explain the basic components of an hydraulic system. (10 Marks)  
b. Show an hydraulic system for the clamping of job application and explain it. (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.