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17ME753

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. Sate 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 energies 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 value. **(10 Marks)**
b. With sketch explain pressure reducing value. **(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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