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Seventh Semester B.E. Degree Examination, Jan./Feb. 2021
Mechatronics

Time: 3 hrs.   Max. Marks: 100

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

Module-1

1 a. Why mechatronics is important to industrial automation? Explain the applications of mechatronics. **(10 Marks)**
   b. What are the merits and demerits of mechatronics? **(10 Marks)**

OR

2 a. Define transducer and sensor. List the difference between transducer and sensors. **(08 Marks)**
   b. Explain light sensors, proximity switch and hall effect sensors. **(12 Marks)**

Module-2

3 a. Define microprocessor and microcontrollers. With the help of sketch, explain the application of micro processor to automobile system (car). **(10 Marks)**
   b. What are the elements of control systems? Mention the difference between microcontroller and microprocessor. **(10 Marks)**

OR

4 a. With the help of block diagram, explain microprocessor. **(08 Marks)**
   b. Draw a neat sketch of 8085 microprocessor. Explain different types of registers used in this processor. **(12 Marks)**

Module-3

5 a. Explain principle operation of Programmable Logic Controller (PLC). How PLC is different from microprocessor in control system. **(10 Marks)**
   b. What do you mean by ladder diagram? Explain the same with the help of an example. **(10 Marks)**

OR

6 a. Mention robot configuration. Explain yaw pitch and roll pertaining to robot, with the help of diagram. **(10 Marks)**
   b. Explain background of actuator in mechatronics system. Explain briefly typical hydraulic actuator and pneumatic actuator. **(10 Marks)**

Module-4

7 a. List the mechanical systems that transmits the power in different planes. **(06 Marks)**
   b. With the help of diagram, explain cams used in Internal Combustion (IC) engines. **(10 Marks)**
   c. List the mechanical aspects of motor selection. **(04 Marks)**

OR

8 a. How relays are used in mechatronics application? Explain. Explain the working of solenoid switch. (08 Marks)
   b. With the help of sketch, explain synchronous DC motor and servomotor. (12 Marks)

Module-5

9 a. Classify the valves used in mechatronics systems. With the help of sketch, explain pressure reducing valve. (10 Marks)
   b. Explain cylinders types. Explain rotory actuator. (10 Marks)

OR

10 a. With the help of diagram and symbol, explain solenoid operated valve. (10 Marks)
    b. Briefly explain design and function of various units of hydraulic system. (10 Marks)

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