CBCS SCHEME

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17ME753

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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