CBCS SCHEME

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17ME753

Seventh Semester B.E. Degree Examination, July/August 2021
Mechatronics

Time: 3 hrs. Max. Marks: 100

Note: ***Answer any FIVE full questions.***

1 a. What is mechatronics? Draw the block diagram of basic elements of a mechatronic system. **(06 Marks)**

b. Briefly explain about evolution of mechatronics. **(06 Marks)**

c. List out the objectives, advantages, disadvantages and applications of mechatronics. **(08 Marks)**

2 a. Define sensor and transducer. Briefly explain Eddy current proximity sensor with a neat sketch. **(10 Marks)**

b. Explain Hall effect transducer with a neat sketch. **(10 Marks)**

3 a. Explain basic elements of microprocessor based control system with a neat sketch. **(10 Marks)**

b. Sketch and explain the architecture of Intel's 8085A microprocessor. **(10 Marks)**

4 a. Define the following terms:
(i) Memory (ii) Address. (iii) I/O and peripheral devices
(iv) Assembler (v) Registers **(10 Marks)**

b. Briefly explain microcontrollers and mention at least two differences between microprocessors and microcontrollers. **(10 Marks)**

5 a. What is PLC? Briefly explain the basic structure of PLC with a neat sketch. **(10 Marks)**

b. Define ladder programming. Also explain ladder diagram with a neat sketch. **(10 Marks)**

6 a. Briefly explain advanced actuators with a neat sketch. **(10 Marks)**

b. With a neat sketch, briefly explain functional requirements of robot. **(10 Marks)**

7 a. Briefly explain translation motion and rotational motion. **(10 Marks)**

b. Explain Gear Ratio calculation with a neat sketch. **(10 Marks)**

8 a. Name any four important solid state switches and explain any one in detail. **(10 Marks)**

b. Explain solenoids in detail. **(10 Marks)**

9 a. Briefly explain pressure relief valve with a neat sketch. **(10 Marks)**

b. With a neat sketch, illustrate different valve actuator symbols for hydraulic and pneumatic systems. **(10 Marks)**

10 a. Write short notes on:
(i) Check valve.
(ii) Needle valve. **(10 Marks)**

b. Sketch and explain the working principle of a hydraulic system. **(10 Marks)**

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