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1511E753

**Seventh Semester B.E. Degree Examination, D0.1,010/Jan.2020**  
**Mechatronics**

Time: 3 hrs.

Max. Marks: 80

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

**Module-1**

- 1 a. Define Mechatronics. Explain any one application of the mechatronic system with neat sketch. (08 Marks)
- b. List the objectives, advantages and disadvantages of mechatronics. (08 Marks)

**OR**

- 2 a. Illustrate a typical sensor showing transducer and signal conditioning unit. (08 Marks)
- b. What is Hall effect? Explain the hall effect with neat sketch. (08 Marks)

**Module-2**

- 3 a. What are micro-controllers? Distinguish between a microprocessor and microcontrollers. (06 Marks)
- b. Explain with a neat sketch the internal architecture of Intel 8085 microprocessor. (10 Marks)

**OR**

- 4 a. Write a short note on 'BUS' related to 8085 microprocessor. (08 Marks)
- b. Define the following terms with respect to microprocessor:  
i) Fetch cycle      ii) Accumulator      iii) Interrupts      iv) Stack pointer. (08 Marks)

**Module-3**

- 5 a. Define programmable logic controller. Briefly explain external structure of PLC. (12 Marks)
- b. Enlist applications of programmable logic controllers. (04 Marks)

**OR**

- 6 a. Mention the different parts of a robot and briefly explain any three parts of a robot. (08 Marks)
- b. Explain functional requirement of robot. (08 Marks)

**Module-4**

- 7 a. With neat sketch explain the Ratchet and power mechanism. (08 Marks)
- b. List the applications of cams in mechanical actuations. (04 Marks)
- c. Explain the method of transmitting power between two shafts. (04 Marks)

**OR**

- 8 a. List the mechanical switch classification and explain any one in detail. (08 Marks)
- b. Explain with neat sketch permanent magnet stepper motor. (08 Marks)

**Module-5**

- 9 a. List classification of direction control valves used as fluid flow system. (04 Marks)
- b. List the advantages of hydraulic system. (02 Marks)
- c. With neat sketch, explain the construction details of hydraulic system. (10 Marks)

**OR**

- 10 a. With neat sketch explain pressure relief valve. (08 Marks)
- b. What are the types of rotary actuators and explain with sketches. (08 Marks)