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10ME65

**Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019**  
**Mechatronics and Microprocessor**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting  
at least TWO full questions from each part.**

**PART – A**

- 1 a. Draw a neat block diagram of a generalized measurement system showing its elements. (08 Marks)
- b. What is meant by control and control system and how they are classified? (04 Marks)
- c. Explain with block diagram of a general microprocessor based process control system. (08 Marks)
- 2 a. How transducers are classified based on type and nature of measure and, along with examples. (04 Marks)
- b. With a neat sketch, explain the working principle of L.V.D.T. (08 Marks)
- c. With a neat sketch, explain Hall-effect sensor/transducer. (08 Marks)
- 3 a. What is meant by stepper motor? What are its performance characteristics? (06 Marks)
- b. Explain with a neat diagram the principle of working of mechanical switches. (06 Marks)
- c. What are the factors influencing the speed of a D.C. motor? What are the different methods of speed control of a D.C. motor? (08 Marks)
- 4 a. What are the different types of OP-Amplifiers? Explain a generalized OP-Amp with a neat sketch. (06 Marks)
- b. What is a digital multiplexer? State the basic principle of a two-channel multiplexer. (08 Marks)
- c. Write a note on data acquisition. (06 Marks)

**PART – B**

- 5 a. What is a microprocessor? Explain the functions of each of following: (06 Marks)
  - i) Accumulator
  - ii) Memory address
  - iii) Program counter register.
- b. Explain the following logic gates: i) AND ii) OR iii) NAND iv) NOR. (06 Marks)
- c. Explain the various general-purpose registers available in the microprocessor. (08 Marks)
- 6 a. Illustrate multiplexed mode of operation of AD<sub>0</sub> – AD<sub>7</sub> bus of 8085A. (08 Marks)
- b. Differentiate between microprocessor and microcontroller. (06 Marks)
- c. Explain with block diagram of a microcontroller. (06 Marks)
- 7 a. Explain the different types of addressing modes in Intel 8085 with examples. (08 Marks)
- b. Explain the instruction set for Intel 8085 (signal paths in 8085 Intel). (06 Marks)
- c. What is assembly language programming explain briefly. (06 Marks)
- 8 a. What is an Interrupt cycle and what is executive cycle explain with example? (06 Marks)
- b. Explain the main features of Intel 4004 microprocessor. (08 Marks)
- c. With a neat sketch, explain the flow of data word in microprocessor. (06 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.