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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:  
i) Accumulator  
ii) Memory address  
iii) Program counter register. (06 Marks)  
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  $AD_0 - AD_7$  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.