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10ME65

**Sixth Semester B.E. Degree Examination, June/July 2018**  
**Mechatronics and Microprocessor**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. What is Mechatronics? What are the advantages, disadvantages and applications of mechatronics? (08 Marks)  
b. What is sequential controller and explain with a block diagram the working of an domestic washing machine. (12 Marks)
- 2 a. Define the following terms: i) Accuracy ii) Hysteresis error iii) Repeatability iv) Drift v) Speed of response. (10 Marks)  
b. Explain with a sketch, an eddy current proximity sensor. (06 Marks)  
c. Explain the following:  
i) Input and output transducer.  
ii) Primary and secondary transducer. (04 Marks)
- 3 a. Differentiate between a diode, thyristor and transistor. (06 Marks)  
b. What are stepper motors? State the advantages and applications. (08 Marks)  
c. Write short notes on relays. (06 Marks)
- 4 a. Explain the wheat stone circuit used for strain measurement. (06 Marks)  
b. Write a note on data acquisition system. (06 Marks)  
c. Define protection. Explain how high voltages and wrong polarity may be protected against, by the use of a zener diode circuit. (08 Marks)

**PART – B**

- 5 a. With the help of a block diagram, explain briefly the organization of a microprocessor. (06 Marks)  
b. What are logic gates? Discuss AND and OR gates with their truth tables and symbols. (08 Marks)  
c. Explain different methods of representing negative number. (06 Marks)
- 6 a. Explain in detail with a block diagram, the architecture of Intel 8085A microprocessor. (10 Marks)  
b. Define the following: i) Write cycle ii) Interrupts. (04 Marks)  
c. What are microcontrollers? Distinguish between a microprocessor and a microcontroller. (06 Marks)
- 7 a. Explain the classification of instructions for the Intel's 8085 microprocessor. (10 Marks)  
b. With a neat flow chart, discuss the programming process. (10 Marks)
- 8 a. Explain with a block diagram the flow of instruction word and flow of data word in a microprocessor. (12 Marks)  
b. List the four operations commonly performed by a CPU. (04 Marks)  
c. Explain the following: i) System timing ii) Accumulator. (04 Marks)

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Important Note: In completing your answers, compulsorily draw diagonal cross lines on the remaining blank spaces, thereby revealing no identification appear to be marked with the questions in which e.g. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 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