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10ME65

Sixth Semester B.E. Degree Examination, June/July 2015
Mechatronics and Microprocessor

Time: 3 hrs.   Max. Marks:100

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

PART – A

1 a. Define Mechatronics. Briefly explain the evolution of mechatronics.   **(10 Marks)**
   b. What is a control system? Explain open loop and closed loop control system with suitable examples.   **(10 Marks)**

2 a. How transducers are classified?   **(05 Marks)**
   b. Explain the following terminology : i) Accuracy   ii) Repeatability   iii) Sensitivity iv) Time constant   v) Hysteresis.   **(10 Marks)**
   c. With a neat sketch, explain Hall effect sensor.   **(05 Marks)**

3 a. Write a symbolic representation of Thyristor and explain its characteristics.   **(10 Marks)**
   b. With a neat sketch, explain the principle working of a permanent magnet stopper motor.
                                                                                        (10 Marks)

4 a. What is a Multiplexer? Explain with a neat sketch, Two – channel multiplexer.   **(10 Marks)**
   b. What is Pulse modulation? Explain the two types of modulation.   **(10 Marks)**

PART – B

5 a. With the help of symbol and truth table, explain NOT, NAND, NOR and XOR gates.
                                                                                        (10 Marks)
   b. Convert the following :   **(10 Marks)**
      i) $(654)_{10} = X_8$ ii) $(11010.01101)_2 = X_{16}$ iii) $(156.8F)_{16} = X_2$ iv) $(2747)_8 = X_{10}$.

6 a. Explain with a block diagram, the architecture of Intel 8085A processor.   **(14 Marks)**
   b. Enumerate the differences between microprocessor and microcontroller.   **(06 Marks)**

7 a. Explain the different types of addressing modes of Intel 8085 microprocessor.   **(10 Marks)**
   b. Explain the following : i) Accumulator   ii) Memory address   iii) instruction set iv) Fetch cycle.   **(10 Marks)**

8 Explain in brief the following :
   a. Functions of various registers.   **(10 Marks)**
   b. Register organization of Intel 4004 microprocessor.   **(10 Marks)**

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