10ME65

Sixth Semester B.E. Degree Examination, June/July 2019
Mechatronics and Microprocessors

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. Classify the control systems of a mechatronic system and explain the components of each class. **(12 Marks)**
   b. Define a measurement system. Name the components required to build a measurement system. With a block diagram, explain the working of a digital thermometer. **(08 Marks)**

2   a. With a neat diagram, explain the working of LVDT. **(08 Marks)**
   b. Classify optical proximity sensors. With a neat diagram explain through beam proximity sensor. **(08 Marks)**
   c. Differentiate between primary and secondary transducers giving any one example. **(04 Marks)**

3   a. With a neat diagram, explain the working of variable reluctance stepper motor. **(08 Marks)**
   b. Classify and briefly explain non-permanent magnet type DC motors with equivalent diagrams. **(12 Marks)**

4   a. With a block diagram, explain the components of OPAMP. Write any two characteristic features of OPAMP. **(10 Marks)**
   b. With neat figures explain pulse modulation. **(10 Marks)**

PART – B

5   a. Explain exclusive OR gate with a truth table and symbol. How can this logic gate be used for binary addition? **(08 Marks)**
   b. Mention any five functions of micro processor. Explain the organization of microprocessor to meet these functions. **(08 Marks)**
   c. Logic circuit is displayed in Fig.Q.5(c). Obtain the expression for Y interms of ABCD **(04 Marks)**
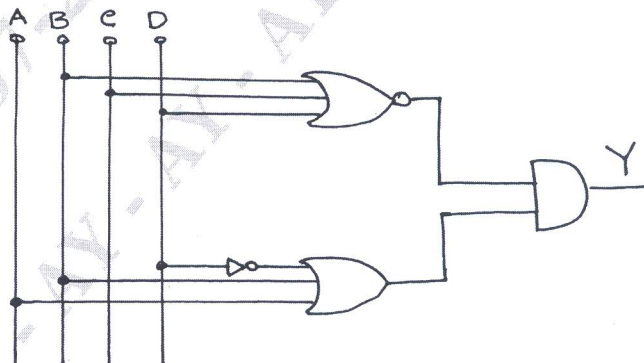

Fig.Q.5(c)

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6 a. Explain the stages of instruction cycle carried out by the CPU. Use necessary flow-diagram.
(10 Marks)

b. Draw the block diagram of microcontroller and tabulate the differences between a micro controller and micro processor. **(10 Marks)**

7 a. Discuss on any four registers used in 8085 microprocessor with a block diagram. **(10 Marks)**

b. Draw the pin configuration of Intel 8085. Discuss on pins 12 to 29. **(10 Marks)**

8 a. With block diagrams, explain instruction and data flow in the CPU. **(10 Marks)**

b. Discuss with necessary figures on:
  i) Accumulator **(04 Marks)**
  ii) System clock **(04 Marks)**
  iii) System timing **(02 Marks)**

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