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10ME65

# Sixth Semester B.E. Degree Examination, Dec.2013/Jan.2014
## Mechatronics and Microprocessor

Time: 3 hrs. Max. Marks:100

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



### PART – A

1 a. What are primary objectives of mechatronics? Explain with a block diagram the key components in a typical mechatronics system. **(10 Marks)**

b. Explain with a block diagram, the working of automatic camera. **(10 Marks)**

2 a. Distinguish between sensor and transducer. Explain detail the classification of transducers. **(10 Marks)**

b. Write short notes on the following: i) Proximity sensors; ii) Hall effect sensors. **(10 Marks)**

3 a. Write brief notes on silicon controlled rectifier and junction field effect transistors. **(10 Marks)**

b. Explain with neat circuit diagrams, various types of D.C. rotors with respect to field coils. **(10 Marks)**

4 a. What is data acquisition? Explain with block diagram DAQ system. **(08 Marks)**

b. Write short notes on the following:

i) Multiplexer. **(06 Marks)**

ii) Explain analog to digital conversion process. **(06 Marks)**

### PART – B

5 a. What is a microprocessor? Draw the block diagram of a micro computer and explain briefly the three segments (ALU, register and control unit) of a microprocessor. **(10 Marks)**

b. Define logic gates. Draw the symbols of AND, OR, EXOR and NOT gates and corresponding truth tables. **(10 Marks)**

6 a. Explain Intel 8085 microprocessor with the help of block diagram. **(10 Marks)**

b. Explain briefly a microcontroller, with a simplified block diagram. **(06 Marks)**

c. Compare microprocessors and microcontrollers. **(04 Marks)**

7 a. Briefly explain the various forms of memory unit: i) ROM; ii) PFROM; iii) EPROM; iv) EEPROM; v) RAM. **(10 Marks)**

b. Write short notes on the following:

i) Data and address bus.

ii) Instruction register and temporary register. **(10 Marks)**

8 Write short notes on the following:

a. Elements of closed loop control system.

b. Bimetallic thermostat.

c. Laws of Boolean algebra.

d. Classification of micro controllers. **(20 Marks)**

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