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Sahyadri College of Engineering & Management
Adyar, Mangalore-575007

# 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.***

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.

### 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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