USN | | | | | | | | | | |

10ME65

Sixth Semester B.E. Degree Examination, Dec.2019/Jan.2020
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. What is Mechatronics? What are the objectives of Mechatronics? **(05 Marks)**

b. Explain with the block diagram of generalized measurement system. **(08 Marks)**

c. Explain with the block diagram, how a microprocessor based control system is used to control the focusing and exposure of an automatic camera. **(07 Marks)**

2 a. What is Transducer? Explain the types of transducers in briefly. **(10 Marks)**

b. What is light sensor? Explain the basic types of light sensors. **(10 Marks)**

3 a. What is an Electrical Actuators? List the categories of electrical actuators with examples. **(05 Marks)**

b. Explain briefly the terms bouncing and debouncing as applied to mechanical switches. **(05 Marks)**

c. Explain briefly the important solid – state switches. **(05 Marks)**

d. What are Stepper Motors? State the advantages and applications. **(05 Marks)**

4 a. Define Single Conditioning. What are the necessity for signal conditioning? **(05 Marks)**

b. What is the term filtering and filter? How are filters classified? **(05 Marks)**

c. Write a short note on : i) Wheat stone bridge ii) Digital signals iii) Multiplexers iv) Data acquisition. **(10 Marks)**

PART - B

5 a. Explain briefly the evolution of microprocessor. **(06 Marks)**

b. What is a Logic gates? What are the logic gates and gate networks? **(08 Marks)**

c. Prove $(A + B)(\overline{A}\ \overline{B} + C)\ \overline{(\overline{B} + AC)} = \overline{A}\ B\ C$. **(02 Marks)**

d. What is the concept of overflow and underflow, with an example? **(04 Marks)**

6 a. List the difference between microprocessor and microcontroller. **(04 Marks)**

b. What is a Clock? Why a clock is necessary in a microprocessor? Draw the ideal and non – ideal clock. **(06 Marks)**

c. Explain the requirements for control and their implementation in micro controllers. **(10 Marks)**

7 a. Explain with block diagram of INTEL 8085 micro processor. **(10 Marks)**

b. Explain the flow of instruction word and flow of data word in a microprocessor. **(06 Marks)**

c. Write short notes on the Assembly Language Programming. **(04 Marks)**

8 a. Explain with a block diagram of Central processing unit of microprocessor. **(08 Marks)**

b. Enumerate the difference between INTEL 8085 and INTEL 4004 register organization. **(06 Marks)**

c. What is a timing and control unit basic concepts? **(06 Marks)**

*****