Printed Pages:01 **Sub Code:NME 014**

Paper Id: 140241 **Roll No.**

B.TECH.
(SEM VI) THEORY EXAMINATION 2018-19
MECHATRONICS

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

a. Differentiate between conventional & mechatronics system design.
b. List the applications of microcontroller.
c. What are the inductor and capacitor?
d. What do you mean by flip-flops?
e. Define the term "Pneumatics".
f. What are micro-actuators?
g. Write the performance characteristics of sensor.
h. What are the features of microprocessor?
i. What are the differences between sensor and transducer?
j. Differentiate between AC Servomotor & DC Servomotor.

SECTION B

2. Attempt any *three* of the following: **10x3=30**

a. List the analog to digital convertor and explain any one in detail.
b. Explain the merit and demerits of mechatronics system with suitable example.
c. What do you mean by actuators? Write the classification of actuators with diagram.
d. Explain the static & dynamic characteristics of sensors.
e. What is DNC? Explain the types of DNC and also write the comparison between DNC and CNC.

SECTION C

3. Attempt any *one* part of the following: **10x1=10**

a. What are the emerging areas of mechatronics
b. Explain the Cam&Follower with its different types.

4. Attempt any *one* part of the following: **10x1=10**

a. Define passive electrical components. Also explain any two passive electrical Components used in mechatronics.
b. Draw the architecture of PLC and explain the function of its elements.

5. Attempt any *one* part of the following: **10x1=10**

a. What is transfer function of the system? Write its advantage and disadvantages.
b. Explain the physical components in hydraulic system with diagram.

6. Attempt any *one* part of the following: **10x1=10**

a. What is transducer? Which parameters are used to define the performance of transducers?
b. Explain the working of automatic car parking system with block diagram.

7. Attempt any *one* part of the following: **10x1=10**

a. Briefly explain the features of flexible manufacturing system.
b. Write the notes on CIM & JIT.