Printed Pages: 02 **Sub Code: EEN 021**

Paper Id: | 1 | 2 | 1 | 6 | 1 | 2 | **Roll No.** | | | | | | | | | | |

B.Tech
(SEM VI) THEORY EXAMINATION 2017-18
MECHATRONICS

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

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

SECTION A

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

a) Explain the Functions of Mechatronic Systems.
b) Differentiate between conventional and mechatronics system design.
c) What do you understand by stepper motors?
d) Describe between Pneumatic and Hydraulic actuation systems.
e) Describe the applications of a microcontrollers
f) Explain the Buses in microprocessors.
g) What are bearing?
h) Define pressure control valves.
i) Describe the applications of Electric drives.
j) Describe the functions of Mechanical damper.

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

a) Differentiate between a sensor and a transducer. Explain the functioning of Displacement transducer.
b) Describe the functions of Mechanical actuation system. Explain the applications of kinematic chains.
c) Describe the differences between Microprocessors & Microcontrollers. Describe the applications of each.
d) Write a case study on Automobile Engine Control. Describe the applications of Automobile Engine Control in mechatronics.
e) Describe the design of a Computer Printer system. Define Vehicle suspension Control systems.

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Describe the working principle of transducers. Explain the construction and working of pressure transducers.

(b) What do you understand by Signal conditioning? Describe the process of filtering and amplification.

4. Attempt any *one* part of the following: 10 x 1 = 10

(a) Describe Mechanical switches. Explain the differences between DC motor and stepper motor.

(b) Describe the different types of Electrical Drives. Explain Fluid systems.

5. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain Programmable logic controllers. Describe the Communication interface.

(b) Explain the Architecture of Microcontrollers. Describe the softwares for Microcontrollers.

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) Describe the control features of an Industrial Robot system. Explain its applications also.

(b) Explain the working principle and operation of an electromechanical disc-control mechatronics system

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain the working principle of NC Machine in detail. State some applications also.

(b) Describe Micro-mechanical Systems. Describe the principle of operation of VCR.