

Roll No.

Total No. of Pages : 02

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**B.Tech. (Computer Science & Engineering) / (Electronics & Communication Engineering) / (Mechanical Engineering) (Sem.-6)**

**MECHATRONICS SYSTEMS**

**Subject Code : BTME610-18**

**M.Code : 79655**

**Date of Examination : 12-07-22**

**Time : 3 Hrs.**

**Max. Marks : 60**

**INSTRUCTIONS TO CANDIDATES :**

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

**SECTION-A**

1. **Write briefly :**

- a) Define mechanical system.
- b) List some limitations of Mechatronics.
- c) What is meant by actuators?
- d) Explain Encoder Definition.
- e) What are the different types of PLC timers?
- f) List down PLC programming methods.
- g) Explain communication protocol.
- h) What is the function of accumulator in 8085?
- i) What is tri-state logic?
- j) What are the design stages in mechatronics?

## SECTION-B

2. *“Measurement and control systems are backbone of any mechatronics system.”* Write a note on this statement.
3. Explain following terms in reference to transducers :
  - a) Sensitivity
  - b) Repeatability
  - c) Stability
  - d) Range
  - e) Span
4. Sketch and explain about basic PLC structure.
5. What is control system? What are the different types of control systems? Explain.
6. Distinguish between principle of Piezoelectric and Magneto strictive actuators.

## SECTION-C

7. What is a microprocessor? Draw a block diagram of micro computer and explain briefly three segments (ALU, register and control unit) of a microprocessor.
8. Design a mechatronics system for an automatic room heating system.
9. Write **short notes** on the following:
  - a) Modeling, analysis and simulation.
  - b) Microsensors.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**