# MASTER OF VOCATION
## Robotics and Automation
### Subject: Drives and Control System for Automation
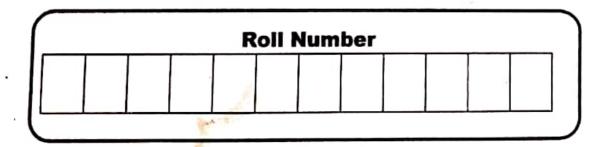### Subject Code: EE-802
### Semester: First
### January 2021
### Theory (External): 70 Marks
### Time: 03 Hours

## Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.

2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 2 marks.

3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 10 marks.

4. Read the questions carefully and write the answers in the answer sheets provided.

5. Do not write anything on the question paper.

6. Wherever necessary, the diagram drawn should be neat and properly labelled

**Roll Number**

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# SECTION –A (SHORT/OBJECTIVE TYPE QUESTIONS)
## (10x2=20 Marks)

A. What do you mean by Automation and what are its applications?

B. What do you mean by PLC and what are its functions?

C. Why we do memory addressing in case of PLC?

D. Define servo amplifier.

E. Explain PLC programming by the help of any application?

F. Write some mnemonics which are used in programming the PLC?

G. Draw and explain the Block Diagram of Electric Drive?

H. What kind of logic functions are used in ladder logic programming?

I. Describe Profinet and Profibus.

J. Explain PLC ladder Diagram of NOT logic and Ex-OR logic.

## SECTION –B (ESSAY TYPE QUESTIONS)
## (5x10=50 Marks)

1. Explain the architecture of PLC in detail and give some advantages of PLC.

2. Write short note on
   (a). Torque v/s Speed characteristics
   (b). Power v/s. Speed characteristics

3. (a) Explain the selection criteria for servo motor and servo amplifier.
   (b) Write a short note on Universal motor and its applications.

4. Explain the types of industrial drives and their respective application in industries.

5. Explain electric braking, rheostat and regenerative braking principles in power Converters.

6. (a) Explain principles of ball screws, belt and pulley.
   (b) Explain Control loops using Current amplifier?

7. Design a simple line follower robotic system to start a motor when a switch is on and simultaneously switch on the LED by the help of PLC programming?

8. What do you mean by Automation hierarchy and explain large control system hierarchy?

## --END OF PAPER—