



Student Name:

Q.1 Write true or false with correcting the wrong statement

(15 marks)

- 1- Software is a set of instructions.
- 2- Automation means Workers controlling machines.
- 3- Productivity increases when outputs decrease while inputs remain the same.
- 4- The largest integer number that a PLC counter function can reach if it uses a 16-bit register is 65,535.
- 5- Productivity is defined as Output/man hour of labor.
- 6- Digital Signal can have 3 possible level.
- 7- Relays consider an input that is given to the PLC.
- 8- In a control system, the output of the controller is given to the final control element.
- 9- Controller essentially is a comparator.
- 10- A sensor is a device that converts physical quantity into measurable signal.
- 11- The relay is an electromagnetic switch.
- 12- PLCs are programmed using relay ladder logic.
- 13- That monitors the inputs and makes decisions in a PLC is the CPU.
- 14- PLC hardware, PLC software or combination of both PLC processor.
- 15- Scan cycle reads inputs, execute program, diagnostics and communication, update outputs.

Q.2

(15 marks)

- (a) What is the meaning of the following terms: PLC – SCADA- ICS – IACS - HMI – CPU – RAM – ROM – EPROM.
- (b) State the various types of automation.
- (c) State the main ICS components.
- (d) Classify the sensors types according to type of energy they detect.
- (e) Mention the basic parameters of the actuators selection criteria.
- (f) Mention the numbering systems that usually used in PLC applications. Also, convert 110100110_2 - 752_8 - 101112131415 to hexadecimal.