DAF-003-1154001 Seat No. _____

M. Sc. (ELE) (Sem. IV) (CBCS) Examination

April - 2022

Paper - 13 : Automation with PLC and SCADA

(Term End Exam) (New Syllabus)

Faculty Code : 003

Subject Code : 1154001

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions :

(1) All questions carry equal marks.

(2) Figures on right hand side indicate marks.

1 Answer the following : (any seven) **14**

(1) What is a PLC ?

(2) Draw electrical symbols of control transformer and maintained switch.

(3) Draw ground test ladder logic and explain in brief.

(4) What is meaning of CR, L, PB and CB in PLC ?

(5) What is a two-hand operation of PLC ?

(6) What is a ladder diagram ?

(7) What is the purpose of programing unit ?

(8) Describe disagreement ladder diagram.

(9) Draw the NAND gate ladder logic diagram.

(10) List the name of PLC input and output devices.

2 Answer the following : (any two)

(1) Write a note on oscillator. **7**

(2) Draw and describe various types of pushbutton switches. **7**

(3) Draw and describe RS flip flop. **7**

3 Answer the following :

(1) Describe the delay-on and delay off timer. **7**

(2) Draw and explain Automatic and extremely triggered one shot ladder logic. **7**

OR

3 Answer the following :

(1) Draw and explain delay flip flop. **7**

(2) Draw and discuss types of counter circuits in detail. **7**

4 Answer the following :

(1) Explain machine control terminology of PLC. **7**

(2) Design the wiring diagram for lighting control system. The system will be Controlled by four switches, SWITCH1, SWITCH2, SWITCH3 and SWITCH4. **7**

These switches will control the lighting in a room based on the following criteria :

(1) Any of three of the switches SWITCH1, SWITCH2 and SWITCH3, if turned ON can turn the lighting on, but all three switches must be OFF before the lighting will turn OFF.

(2) The fourth switch SWITCH4 is a Master Control Switch. If this switch is in the ON position, the lights will be OFF and none of the other three switches have any control.

5 Answer the following : (any two)

(1) Write a note on J-K flip flop. **7**

(2) Draw ladder diagram for single cycle and explain in detail. **7**

(3) What is two handed anti-tie down operation in PLC ? Explain in brief. **7**

(4) Draw and explain Boolean logic and relay logic. **7**