U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

September / October 2023 Supplementary Examinations

Programme: B.E. **Semester: VI**

Branch: Institutional Elective **Duration: 3 hrs.**

Course Code: 19EE6OE1PS **Max Marks: 100**

Course: PLC and SCADA **Date: 25.09.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1	a)	With a block diagram explain supervisory control of an industrial process.	**08**
	b)	Mention the application and usage of SCADA for remote automated system.	**06**
	c)	With neat block diagram discuss how DAS is implemented for a typical industrial automation.	**06**

UNIT - II

2	a)	Define scan cycle with neat flow diagram.	**05**
	b)	With neat representation provide interface module for the Analog I/O connected to PLC	**10**
	c)	List various standardized languages adopted for PLC programming as per IEC-61131 standard.	**05**

UNIT - III

3	a)	Develop a relay schematic, gate logic and ladder logic for the following i) (AB)+(CD) =Y ii) $(A+\overline{B})C=Y$ iii) For a stair case bulb control with two-way switch	**10**
	b)	Explain PLC timer instruction RTO with timing diagram.	**10**

OR

4	a)	Illustrate the different timer operations for PLC. Using all the types of timers, create your own automation process. Provide assumptions and design the ladder diagram for the same.	**10**
	b)	Write a ladder diagram for a typical bottle filling process which helps in filling the beverages in a bottle within a specified time duration and indicate the number of bottles filled.	**10**

UNIT - IV

5 a) Explain the operation of the following: **10**

i) Start – stop logic
ii) MOV
iii) MVM
iv) GEQ
v) MOD

b) Design a PLC ladder diagram to control set of traffic lights in one direction using timer functions. **10**

OR

6 a) Explain the following instructions with an example application. **10**
JMP, SBR and RET

b) Explain the operation of the following instructions **10**

i) SQRT
ii) ADD
iii) COP
iv) SCL
v) EQU

UNIT - V

7 a) Discuss the applicability of functional levels of DCS in automation. **10**

b) With neat diagram explain the hierarchical database system architecture. **10**

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