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P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belgaum)
Sixth Semester, B.E. - Electrical and Electronics Engineering
Semester End Examination; June - 2017
Programmable Logic Controllers and SCADA

Time: 3 hrs   Max. Marks: 100

Note: *Answer **FIVE** full questions, selecting **ONE** full question from each unit.*

UNIT - I

1. a.	What is PLC? With neat diagram, explain functional components of PLC.	10
b.	Explain following input device operation:	
	i) Reed switch ii) Incremental encoder	10
	iii) Pressure sensor diaphragm iv) Orifice flow meter.	
2 a.	What is IEC standard? Explain IEC standards to cover complete life cycle of PLC.	8
b.	Explain the terms associated to measure performance of sensors.	8
c.	What are the various programming devices used for programming PLC's?	4

UNIT - II

3 a.	With Input and Output devices used, illustrate the design of following applications in PLC:	8
	i) A conveyor Belt ii) A lift.	
b.	What is serial communication? Explain series standards for successful communication.	8
c.	With figure, illustrate various forms of output units.	4
4 a.	What is ISO/OSI model? Explain layer of OSI model.	8
b.	Explain PLC complete cycle operation? How response speed is determined.	8
c.	Explain various forms of input/output addressing used by PLC manufactures.	4

UNIT - III

5 a.	Explain the conventions adopted in drawing ladder diagram.	10
b.	With examples, explain "Instruction List" Programming technique.	10
6. a	With latter diagram, explain following:	10
	i) XOR logic ii) Latch circuit iii) Three input three sequenced outputs.	
b.	Explain following internal relay operation:	10
	i) Battery bucked relays ii) One-shot operation.	

UNIT - IV

7 a.	Explain sequence and cascaded timers with ladder diagram.	8
b.	With ladder diagram explain different forms of counter.	8
c.	What is pulse times? Illustrate.	4

8 a. What is sequencer? Explain how sequencer logic implemented in ladder diagram. 8

  b. Explain following timer operation:

     i) On/Off cycle timer   ii) Off-Delay timer. 8

  c. What is shift register? How shift registers are represented in ladder diagram? 4

UNIT - V

9 a. Explain data comparison and data selection instruction operations. 10

  b. Explain Remote terminal unit and master terminal unity of SCADA system. 10

10 a. With neat block diagram, explain SCADA system. 10

  b Explain role of SCADA in Automation Industry. 10

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