A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 59326

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Elective

Electrical and Electronics Engineering

15UEE926 - PLC & SCADA APPLICATIONS

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Solenoid is an example for an_____. CO1- R

   (a) Input device (b) Output device (c) Safety device (d) Control device

2. In a PLC, scan time refers to the amount of time in which CO1- R

   (a) timer and counters are indexed by (b) one rung of ladder logic takes to get complete

   (c) the entire program takes to excecute (d) the technician enters the program

3. Ladder contacts can be programmed in: CO2- R

   (a) series-parallel (b) series or parallel (c) Both answers are true (d) None

4. Before planning an alarm system within the SCADA one should consider. CO2- R

   (a) What conditions triggers the alarm?

   (b) How operators will be notified of those alarms?

   (c) What actions will occur in response to those alarms?

   (d) None of the above

5. _____is the apparatus which presents process data to a human operator and through this the human operator monitors and controls the process. CO3- R

   (a) Input device (b)HMI (c) Sensor (d) Actuator

6. A SCADA system will include CO3- R

(a) signal hardware & controllers (b) networks

(c) user interface (HMI) (d) all of the above

7. When was SCADA introduced into the North Sea? CO4- R

(a) 1960 (b) 1950 (c) 1970 (d) 1980

8. Which of the following RLL applications is not performed in early automation systems? CO4- R

(a) On/Off control of field devices (b) Logical control of discrete devices

(c) On/Off control of Master devices (d) None of the above

9. PLCs are _____ designed for use in the control of a wide variety of manufacturing machines and systems CO5- R

(a) special-purpose industrial computers (b) personal computers

(c) electromechanical systems (d) All of the above

10. The PLC is used in _____. CO5- R

(a) machine tools (b) automated assembly equipment

(c) moulding and extrusion machines (d) all of the above

PART – B (5 x 2= 10Marks)

11. What is PLC? CO1- R

12. Illustrate sequencer instruction. CO2- R

13. Summarize the functions of SCADA system? CO3- R

14. Sketch the run time architecture of SCADA. CO4- R

15. Write any two advantages of PLC over relays. CO5- R

PART – C (5 x 16= 80Marks)

16. (a) (i) Describe the advantages and disadvantages of PLC based controller over normal controller CO1- U (8)

(ii) Explain the different types of memories used in PLC. CO1- U (8)

Or

(b) Draw and Explain the architecture and functions of PLC. CO1- U (16)

17.	(a)	(i) Explain in detail PID control of PLC with neat diagram.	CO2- U	(8)
		(ii) List out the maintenance procedure in PLC.	CO2- U	(8)
		Or		
	(b)	Apply program control instructions and develop ladder diagram for production line.	CO2- U	(16)
18.	(a)	(i) Write short notes on Human machine interface	CO3- U	(8)
		(ii) Elaborate the functions of Remote terminal unit.	CO3- U	(8)
		Or		
	(b)	Illustrate IED in detail.	CO3- U	(16)
19.	(a)	Analyze the IEC 61850 layered architecture	CO4- Ana	(16)
		Or		
	(b)	Identify the function of single unified standard IEC61850.	CO4- App	(16)
20.	(a)	Construct ladder diagram for speed control of DC motor using PLC.	CO5- C	(16)
		Or		
	(b)	Apply SCADA in transmission and distribution sector operation.	CO5- App	(16)