

**A**

**Reg. No. :**

--	--	--	--	--	--	--	--	--	--

**Question Paper Code: 59326**

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

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 current sinking DC input module the current flows out of the \_\_\_\_\_. CO1- R  
(a) Input field device      (b) Output field device  
(c) Controlling device      (d) Heat sink
3. \_\_\_\_\_ controllers produce outputs that depend on the magnitude, duration and rate of change of the system error signal. CO2- R  
(a) P      (b) PI      (c) PID      (d) Micro
4. First generation of SCADA communication architecture is also known as \_\_\_\_\_. CO2- R  
(a) Monolithic      (b) Distributed      (c) Network      (d) Interconnected
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. \_\_\_\_\_ convert sensor signals to digital data and sending digital data to the supervisory system. CO3- R
- (a)RTU                      (b) PLC                      (c)Safety device                      (d) Motor
7. A hardware assembly in PLC which houses the processor, communication and I/O modules is called as \_\_\_\_\_ . CO4- R
- (a)Mother board              (b) Output device              (c) Rack                      (d) FRC
8. \_\_\_\_\_ is a computer application that is used to monitor and control a plant or equipment at the supervisory level. CO4- R
- (a) PLC                      (b) SCADA                      (c) Controller                      (d) VLSI
9. \_\_\_\_\_ can be used to control the speed of AC induction motors along with PLC. CO5- R
- (a)VFD                      (b)Starter                      (c)Autotransformer                      (d) Relay
10. SCADA stands for \_\_\_\_\_ . CO5- R
- (a) Supervisory control and data acquisition      (b) Sequential control and data acquisition
- (c)Supervisory current and data acquisition      (d)Supervisory control and data authority

PART – B (5 x 2= 10Marks)

11. Mention the role of I/O modules in a PLC. CO1- R
12. What is the meaning of Scan time in PLC? CO2- R
13. Define SCADA. CO3- R
14. List the features of SCADA software. 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-Ana      (8)
- (ii) Discuss the procedure for proper construction of PLC ladder diagrams with suitable examples. CO1-Ana      (8)

Or

- (b) Enumerate the input and output modules of PLC with neat diagram. CO1-Ana (16)
17. (a) Explain in detail PID control of PLC with neat diagram. CO2- U (16)
- Or
- (b) Describe with a neat diagram the basic operation of controlling a robot with PLC sequencer control. 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) (i) Explain the working of Intelligent electronic devices. CO3- U (8)
- (ii) Explicate data acquisition system in SCADA. CO3- U (8)
19. (a) (i) Explain first, second, third generation of SCADA architecture. CO4-U (8)
- (ii) Briefly explain the energy management system. CO4-U (8)
- Or
- (b) (i) Explain automatic substation control based on SCADA. CO4-U (8)
- (ii) List the advantages and disadvantages of SCADA system. CO4-U (8)
20. (a) Explain the operation of PLC based speed control of AC motor drive. CO5- U (16)
- Or
- (b) Illustrate the application of SCADA in distribution system. CO5- U (16)

