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Question Paper Code: 59326

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

Elective

Electrical and Electronics Engineering

15UEE926 - PLC AND SCADA APPLICATIONS

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The acronym PLC stands for CO1- R
 - (a) Pressure Load Control
 - (b) Programmable Logic Controller
 - (c) Pneumatic Logic Capstan
 - (d) PID Loop Controller
2. In PLC programming, a retentive function is one that CO1- R
 - (a) Defaults to the “on” state
 - (b) Comes last in the program
 - (c) Is not reset after a power cycle
 - (d) Defaults to the “off” state
3. A good application for a timed interrupt in a PLC program would be CO2- R
 - (a) A communications function block
 - (b) A PID function block
 - (c) A math function block
 - (d) A motor start/stop rung
4. The difference between online and offline PLC programming is . . . CO2- R
 - (a) whether the PLC is running or stopped
 - (b) whether the programming PC has internet connectivity
 - (c) the type of programming cable used
 - (d) where the edited program resides

5. A SCADA system will include CO3- R
 (a) signal hardware & controllers (b) networks
 (c) user interface (HMI) (d) all of the above
6. A Central host computer server or serves called CO3- R
 (a) Master Terminal unit (MTU) (b) DCS (c) PLC (d) Microcontroller
7. The first generation of SCADA architecture is CO4- R
 (a) Monolithic (b) Distributed (c) Networked (d) HMI
8. Choose the layer of IEC 60870-5 CO4- R
 (a) Two layer (b) Three layer (c) Four Layer (d) Five layer
9. PLC application includes. CO5- R
 (a) speed control (b) Remote control
 (c) Robotic control (d) none of these
10. SCADA is CO5- R
 (a) Real time data Acquisition and processing.
 (b) Data storing.
 (c) Data Monitoring and control.
 (d) all the above

PART – B (5 x 2= 10 Marks)

11. Define PLC CO1- R
12. List the various analog PLC operations CO2- R
13. Identify the factors for Data acquisition system CO3- R
14. What is Energy Management system? CO4- R
15. State Applications of SCADA. CO5- R

PART – C (5 x 16= 80Marks)

16. (a) (i) Draw and explain block diagram of programmable logic controller CO1- U (8)
 (ii) Explain input analog devices. CO1- U (8)
- Or
- (b) Narrate the ON and OFF-Delay timer and write the notes on different types of counters used in PLC. CO1- U (16)
17. (a) Enumerate the different functions for the operation of PLC CO2- App (16)
 Or

- (b) Apply the program control instructions and develop a ladder logic diagram for production line. CO2- App (16)
18. (a) Explain the monitoring and supervisory functions of SCADA. CO3-U (16)
Or
(b) Discuss in detail about Remote Terminal Unit CO3-U (16)
19. (a) Analyze the IEC 61850 layered architecture with neat sketch. CO4- Ana (16)
Or
(b) Discuss the Energy Management system and State Estimation of SCADA. CO4- U (16)
20. (a) Construct ladder diagram for speed control of DC motor using PLC. CO5- U (16)
Or
(b) Design a Sub-station control system for transmission and distribution by SCADA. CO5- U (16)

