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**Question Paper Code: 41381**

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Elective

Electrical and Electronics Engineering

14UEE905 - PROGRAMMABLE LOGIC CONTROLLER AND SCADA

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. PLCs are \_\_\_\_\_ designed for use in the control of a wide variety of manufacturing machines and systems.
  - (a) Special-purpose industrial computers
  - (b) Personal computers
  - (c) Electromechanical systems
  - (d) All the above
2. The PLC was invented by
  - (a) Bill Gates
  - (b) Dick Morley
  - (c) Bill Landis
  - (d) Tod Cunningham
3. To protect a PLC from any incoming surges from field, Isolated devices such as \_\_\_\_\_ is used.
  - (a) Transformer
  - (b) ADC
  - (c) DAC
  - (d) Transducer
4. \_\_\_\_\_ language can be programmed interactively with the PLC.
  - (a) Online
  - (b) Offline
  - (c) Basic
  - (d) None of these
5. A SCADA system performs Data acquisition, Networked data communication, \_\_\_\_\_ and control.
  - (a) Data representation
  - (b) Microcontroller
  - (c) Distributed control system
  - (d) None of these

6. Radio transmitter is electronic device which, with aid of an antenna produces \_\_\_\_\_waves.
- (a) Micro (b) Radio  
(c) Infrared to another voltage (d) Ultrasonic
7. HMI means \_\_\_\_\_machine interface?
- (a) Human (b) Heart (c) Hard (d) High
8. A \_\_\_\_\_consists of number of mini computers or microcomputers interconnected in a tree structure.
- (a) Shared bus system (b) Ring system  
(c) Hierarchical system (d) None of these
9. In process control the basic objective is to \_\_\_\_\_the value of some quantity.
- (a) Regulate (b) Process  
(c) Both (a) and (b) (d) None of these
10. In industrial process control a \_\_\_\_\_is a telemetry device which converts measurements from a sensor in to a signal and sends it to a control device located a distance away.
- (a) Transducer (b) Sensor  
(c) Transmitter (d) Controller

PART - B (5 x 2 = 10 Marks)

11. List the input devices of PLC.
12. What are the methods are used to keep enclosure temperature with in allowable limits.
13. What is SCADA.
14. Define energy management system.
15. Write some areas of application of SCADA in power systems.

PART - C (5 x 16 = 80 Marks)

16. (a) What is PLC? Explain about the components of PLC. (16)

Or

- (b) Explain the ladder diagrams for the logic functions: (i) AND (ii) OR (iii) XOR (iv) XNOR. (16)

17. (a) Explain the operation of basic two axis robot with PLC sequencer control. (16)

Or

(b) Write short notes on basic PLC sequencer function. Explain the PLC installation and troubleshooting. (16)

18. (a) Write a brief description about SCADA systems. (16)

Or

(b) Explain the functions of SCADA. (16)

19. (a) Explain in detail the different operating states of power system. (16)

Or

(b) Explain the single unified standard architecture IEC61850 SCADA standard in detail. (16)

20. (a) Explain the application of SCADA in power system network. (16)

Or

(b) Explain application of PLC for speed control of AC motor. (16)

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