Register Number………………………

B.E. DEGREE EXAMINATIONS: NOV/DEC 2012

Seventh Semester

ELECTRONICS AND INSTRUMENTATION ENGINEERING

EIE115: Logic and Distributed Control Systems

Time: Three Hours   **Maximum Marks: 100**

Answer All Questions:-

PART A (10 x 1 = 10 Marks)

1. IEEE 802.3 is popularly called as _____

    a) LAN   b) WAN   c) ETHERNET   d) MAN

2. _____ have single communication channel that is shared by all the machines on the network.

    a) Broadcast networks   b) Personal area network

    c) Multicast network   d) None of the above

3. _____ is typical of small PLCs that come in 1 package with no separate, removable units

    a) Fixed I/O   b) Modular I/O   c) Closed system   d) Open system

4. The microprocessor scans the channel and reads the data and the process is called as _____

    a) Channel scanning   b) Polling   c) Interrupt scanning   d) None of the above

5. Mechanical timing relays provide time delay through _____

    a) ON-delay   b) OFF-delay   c) Both a and b   d) None of the above

6. In PLC the timer-timing bit is true whenever the accumulated value of the timer is _____

    a) True   b) false   c) changing   d) ON

7. _____ system is sensitive to single point failure.

    a) Central computer   b) Hybrid system   c) Distributed system   d) None of the above

8. In a LCU, the processor must reset _____ to indicate that the processor is operating properly

    a) DAC   b) ADC   c) RAM   d) Watchdog timer

9. The transmission method in HART network communication requires _____

    a) 1 to 15 mA   b) 4 to 20 mA   c) 3 to 15mA   d) None of the above

10. The device from one manufacturer can be substituted with that of another manufacturer is defined as

    a) Interoperability   b) Interchangeability

    c) Inter-communicability   d) None of the above

PART B (10 x 2 = 20 Marks)

11. List the features of media access protocol

12. Differentiate between character oriented and bit oriented protocol?

13. Brief about sequential and programmable controllers.

14. Draw the functional block diagram of DCS.

15. What is the function of UP-Counter in PLC?

16. Mention the functions of Industrial PLCs.

17. Define local control unit.

18. Name any four Engineering interface used in PLC.

19. Sketch a typical HART signal.

20. Define Interoperability.

PART C (5 x 14 = 70 Marks)

21. a) Describe the functions performed by various layers of ISO-OSI reference Model.
                                    (OR)

    b) (i) Discuss in detail about various issues involved in design of bridges.   (7)
      (ii) Write short notes on routers.   (7)

22. a) (i) Explain in detail about the hardware configuration and software used in SCADA system.   (7)

      (ii) Write short notes about Remote Terminal Unit.   (7)
                                      (OR)

    b) Draw and explain the architecture of PLC with neat diagram.

23. a) Explain the ladder logic programming with examples.
                                    (OR)

b) Write a program for traffic light signal where the transition from RED to GREEN to AMBER light is accomplished by cascading timer circuit .The sequence of operation are

                RED 30s ON

            Green 25s ON

            Amber 5s ON.

24. a) Draw and explain the architecture of LCU and compare different types of LCU architecture

(OR)

b) With neat diagram, explain about the Low level and high level engineering interface of DCS.

25. a) Explain the HART protocol with necessary block diagram.

(OR)

b) Explain the architecture and various topologies used in field bus communication.

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