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Question Paper Code : 51538

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Seventh Semester

Electronics and Instrumentation Engineering

EI 2401/EI 71/10133 E 1701 – INDUSTRIAL DATA NETWORKS

(Common to Instrumentation and Control Engineering)

(Regulations 2008/2010)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. Define CSMA/CD protocol.
2. What is Network hierarchy ?
3. Define Bridge.
4. Write the different cabling used in Ethernet communication.
5. Mention any two important functions of smart instruments.
6. Assume that a model 3051 C smart pressure transmitter for a Rosemount System Control system, is to be installed using a Shielded twisted pair. Calculate the maximum cable length permitted for reliable operation.
7. Mention the PROFIBUS features.
8. Write the disadvantage of FIELDBUS compared to the ± 20 mA analog HART standard.
9. What is the function of radio modem ?
10. Differentiate radio and wireless communication.

PART – B (5 × 16 = 80 Marks)

11. (a) (i) What are the advantages of Layered architecture ? Explain. (8)
(ii) Explain the functions of the various layers in an ISO-Open systems interconnection seven Layer Model. (8)

OR

- (b) (i) Explain the different medium access control mechanisms. (12)
(ii) Differentiate between Token Bus & Token Ring. (4)

12. (a) (i) What are the various Ethernet Technologies ? Explain. (12)
(ii) Can the length of an Ethernet be increased to many segments of 500 meters each merely by adding repeater to connect each additional segment ? Give reasons. (4)

OR

- (b) (i) How can a bridged network span long distances ? (6)
(ii) Explain the issues involved in the design of bridges. (10)

13. (a) (i) Explain in detail about HART communication protocol. (8)
(ii) List the applications of HART. (8)

OR

- (b) (i) Draw and explain field bus architecture. (8)
(ii) Write short notes on OPC. (8)

14. (a) Enumerate in detail, about the MODBUS protocol structure with diagrams. (16)

OR

- (b) (i) Discuss the PROFIBUS communication model depicting the structure of virtual field with object dictionary. (8)
(ii) Explain the characteristics of PROFIBUS PA troubleshooting approaches in detail. (8)

15. (a) (i) Enumerate the range of frequency bands of radio transmission and their applications. (8)
(ii) Compare the features of thin and thick Ethernet. (8)

OR

- (b) (i) Explain the features of wireless LAN. (8)
(ii) Draw the schematic of a radio modem. (8)