Code : 051513

B.Tech 5th Semester Exam., 2017

COMPUTER NETWORK

Time : 3 hours *Full Marks* : 70

Instructions :

(i) The marks are indicated in the right-hand margin.

*(ii) There are **NINE** questions in this paper.*

*(iii) Attempt **FIVE** questions in all.*

*(iv) Question No. **1** is compulsory.*

1. Answer any *seven* of the following questions : 2×7=14

(a) Write any two functions of the session layer in OSI model.

(b) What is Hamming code?

(c) What is the significance of the twisting in twisted-pair cable?

(d) What do you mean by piggybacking?

(e) What is the purpose of the jam signal in CSMA/CD?

(f) What are the advantages of dividing an Ethernet LAN with a bridge?

(g) What does the term 'best effort' mean in context with IP?

(h) Why is there no need of CSMA/CD in a full-duplex switched Ethernet?

(i) How does redundancy facilitate error detection?

2. *(a)* Describe the architecture and working of ring topology. What are its advantages and disadvantages? 7

(b) Compare and contrast between the OSI model and the TCP/IP model. 7

3. *(a)* Describe the working of fiber-optic cables. Briefly explain different propagation modes used in fiber-optic cables. 7

(b) Explain Go-Back-N ARQ as a sliding window mechanism for error control. 7

4. *(a)* Describe how the two-dimensional parity check is able to detect errors. Consider

'1100101100110000110100101101'

as the data that is to be sent over the network. 7

(b) Draw a flowchart and explain the working procedure of the pure ALOHA protocol. 7

5. Explain in detail Fast Ethernet. Describe the structure of the physical layer and various implementation types at this layer. 14

6. With the help of a neat and labelled diagram, explain the message format of ICMP. Explain various types of ICMP error messages and query messages. 14

7. *(a)* What do you mean by layer 2 switching? Explain in detail the functioning of layer 2 switches. 7

(b) Discuss the functions and the design issues of the network layer in the OSI model. 7

8. *(a)* Describe bridge in terms of a networking device. What are different types of network bridge? 7

(b) Differentiate between Static Routing and Dynamic Routing. 7

9. Explain the following terms : 7×2=14

(a) Border Gateway Protocol

(b) User Datagram Protocol

★ ★ ★