

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
