

Code : 051.

(1)

B.Tech 7th Semester Exam., 2017**FUNDAMENTAL OF DATA
COMMUNICATION**

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. Choose/Answer any seven of the following :

2×7=14

- (a) A _____ is a device that forwards packets between networks by processing the routing information included in the packet.
- (i) bridge
 - (ii) firewall
 - (iii) router
 - (iv) All of the above
- (b) What is the maximum number of IP addresses that can be assigned to hosts on a local subnet that uses the 255.255.255.224 subnet mask?
- (i) 14
 - (ii) 15
 - (iii) 30
 - (iv) 62

- (f) What is the subnetwork number of a host with an IP address of 172.16.66.0/21?

- (i) 172.16.36.0
- (ii) 172.16.48.0
- (iii) 172.16.64.0
- (iv) 172.16.0.0

- (g) You have a network with a subnet of 172.16.17.0/22. Which is the valid host address?

- (i) 172.16.17.1 255.255.255.252
- (ii) 172.16.0.1 255.255.240.0
- (iii) 172.16.20.1 255.255.254.0
- (iv) 172.16.18.255 255.255.252.0

- (h) Differentiate between analog and digital signals. <http://www.akubihar.com>

- (i) What is domain name system?

- (j) What is framing?

2. What do you mean by network topologies? Explain in brief the various types of network topologies. Calculate the number of links in each topology for n devices.

3+7+4=14

3. Describe frequency division multiplexing. What is line coding? Write down the main function of transport layer and session layer.

7+3+4=14

4. Write short notes on OSI model with their layers and working of each layer in computer network. Also describe the difference between TCP/IP model and OSI model. $7+7=14$
5. Explain ARP, RARP and protocol. Show the request and reply message of ARP and RARP protocol. $7+7=14$
6. Why is flow control needed? Explain in brief the flow control strategies of stop and wait ARQ, if 5-bit sequence number is zero. What would be the sequence number of the 100th frame, if go back N-ARQ is used? $3+5+6=14$
7. What are the functions of datalink layer? What is the relationship between packet and frame? Consider a frame relay network having capacity of 2 Mb of data arriving at the rate of 25 Mbps for 40 m/sec. The token arrival rate is 2 Mbps and the capacity of bucket is 500 kb with maximum output rate 25 Mbps. Calculate the burst length and total output time. $3+4+7=14$
8. What are different types of errors? Explain CRC with example. $7+7=14$
9. Write short notes on the following : $7 \times 2 = 14$
- Checksum
 - Circuit switching vs. Packet switching

- (c) Which of the following is not a class of IP address?
- Class E
 - Class F
 - Class D
 - None of the above
- (d) What is the possible range of IP addresses for Class B?
- 0.0.0.0 through 127.255.255.255
 - 128.0.0.0 through 191.255.255.255
 - 192.0.0.0 through 223.255.255.255
 - 224.0.0.0 through 239.255.255.255
- (e) You have an interface on a router with the IP address of 192.168.192.10/29. Including the router interface, how many hosts can have IP addresses on the LAN attached to the router interface?
- 6
 - 8
 - 30
 - 32