(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 110601 Roll No. | | | | | | | | | |

B.TECH.

Theory Examination (Semester-VI) 2015-16

COMPUTER NETWORKS

Time : 3 Hours *Max. Marks : 100*

Note: Attempt questions from all Sections as per directions.

Section-A

Attempt all parts of this section. Answer in brief.

(2×10=20)

Q1. (a) Given the IP address 180.25.21.172 and the subnet mask 255.255.192.0, what is the subnet address?

(b) What is count-to-infinity problem?

(c) The filters used in telephony end offices limit high frequency components on telephone lines. What is its cut-off frequency when ADSL modems are used on customer lines?

Measurement of slotted ALOHA channel with infinite number of users show that the 10 percent of slots are idle.

(i) What is the channel load?

(ii) What is the throughput?

(e) What is the net mask of the gateway interface in a sub-network where maximum of 25 hosts exist and IP address of one of the hosts is 192.168.1.1?

(f) A typical socket-server application responds user requests using TCP over a specified port. What is the typical sequence in terms of socket functions on server side?

(g) How many layers are there in X.25 protocol? Enlist the layers.

(h) Define routing. In what way it is different from switching?

(i) What are the applications of Computer Networks?

(j) Give an example of packet Meta data.

Section-B

2. Attempt any five questions from this section. (10×5=50)

(a) A rectangular wave-guide (a = 2 cm b = 1 cm) filled with de-ionized water (μ=l, ξ = 81) operates at 3 GHz. Determine all propagating modes and corresponding cut-off frequencies.

(b) (i) An ALOHA network uses 19.2 Kbps channel for sending message packets of 100 bits long size. Calculate the maximum throughput for pure ALOHA network.

(ii) What is unicast routing? Discuss unicast routing protocols.

(c) How does DNS perform data name resolution? What are the different types of name servers? Mention the DNS message format for query and reply messages.

(d) Explain TCP congestion control algorithm in internet. What is TCP segment header? Also discuss TCP connection management.

(e). What is the total delay (latency) for a frame size of 10 million bits that is being set up on link with 15 routers, each having queuing time of 2μs and a processing time of 1 μs? The length of link is 3000km. The speed of light inside the link is 2×10^8 m/sec. The link has bandwidth of 6Mbps.

(f) What is OSI Model? Explain the functions and protocols and services of each layer?

(g) What is IP addressing? How it is classified? How is subnet addressing is performed?

Section-C

Attempt any two questions from this section. **(15×2=30)**

(i) If fragmentation needed in concatenated virtual circuit internets or only in datagram systems? Explain.

(ii) What is hamming code? Explain its working with suitable example.

4. Answer each question:

(i) Find the class of each address

(a) 140.213.10.80

(b) 52.15.150.11

(ii) What is the type of the following address?

(a) 4F::A234:2

(b) 52F::1234:2222

(iii) What is congestion? Name the techniques that prevent congestion.

5. Write short notes on any three of the following:

(i) DNS in the internet

(ii) Voice Over IP

(iii) SNMP

(iv) Electronic mail

(v) File Transfer Protocol