

Printed Pages: 4

ECS-601/NCS-601

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

Paper ID : 110601

Roll No. 

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**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?

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- (d) 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 ( $a = 2 \text{ cm}$   $b = 1 \text{ cm}$ ) filled with de-ionized water ( $\mu=1$ ,  $\epsilon = 81$ ) operates at 3 GHz. Determine all propagating modes and corresponding cut-off frequencies.

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- (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  $2\mu\text{s}$  and a processing time of  $1\mu\text{s}$ ? The length of link is 3000km. The speed of light inside the link is  $2 \times 10^8$  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?

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**Section-C**

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

3. (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

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