

**BACHELOR IN COMPUTER
APPLICATIONS****Term-End Examination****June, 2007****CS-69 (S) : TCP/IP PROGRAMMING**

Time : 3 hours

Maximum Marks : 75

Note : Question no. 1 is **compulsory**. Answer any **three** questions from the rest.

1. (a) Why has TCP/IP become a standard protocol for the Internet ? 3
- (b) How will you decide which class of IP address to use for a particular network ? Use suitable example. Does the maximum number of hosts in a network, restrict the class of IP address that can be used for the network ? 6
- (c) What is the meaning of the following special IP addresses : 4
- (i) 0.0.0.0
 - (ii) 127.0.0.1
 - (iii) 172.17.X.X
 - (iv) 255.255.255.255

- (d) Why does lost acknowledgement not necessarily force the retransmission of TCP segment ? 4
- (e) Instead of using 16 bits for the network part of a class B address originally, suppose 20 bits had been used. How many class B networks would there have been ? 3
- (f) In electronic mail, what is MIME ? Explain its functionality. 4
- (g) What is the purpose of FTP and Telnet ? Explain their functionality. 6
2. (a) Compare the TCP header and the UDP header. List the fields in the TCP header that are missing from UDP header. Give reasons for their absence. 9
- (b) Briefly describe the mechanisms used by TCP for flow control and congestion control. 6
3. (a) What are the limitations of IPv4 address classes ? How are a large number of IP addresses wasted using IPv4 address classes ? What are the possible solutions to the limitations of IP addressing ? 5
- (b) Answer the following questions : $2 \times 5 = 10$
- (i) What is the minimum and maximum size of an IP datagram ?
- (ii) What is the minimum and maximum size of an IP datagram header ?
- (iii) What are the different types of criteria that can be specified using the Type of Service field ?

- (iv) What is the use of the Time-to-Live (TTL) field in the IP header ?
- (v) Which part of the IP datagram is used for calculating the checksum ?

4. (a) What is an IP sub-network ? What is the use of sub-networks ? Is it necessary for hosts in a network "M" to know about the subnetworks in another network 'N' to communicate with hosts in network 'N'. 5
- (b) ARP and RARP both map addresses from one space to another. In this respect, they are similar. In what way do they differ ? 3
- (c) Why do we need a DNS system when we can directly use an IP address ? What are the three domains of the domain name space ? What is the purpose of the inverse domain ? 7

5. Differentiate between the following : 3×5=15

- (a) TCP Model and OSI Model
- (b) IPv4 and IPv6
- (c) Connection-oriented and Connectionless services
- (d) 2-way and 3-way handshake
- (e) Error-control at lower layers and Error-control at TCP layer

