Total No. of printed pages = 4

19/6th Sem /UECE 602

2022

COMPUTER NETWORK

Full Marks – 100

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. (a) Briefly describe the services provided by the data link layer. 8

   (b) Define framing and the reason for its need. 3

   (c) Define piggybacking and its usefulness. 3

   (d) Explain with a neat diagram the Send Window for Go-Back-N ARQ for m=3, where m is the size of the sequence number field in bits. 6

2. (a) Draw the flow diagram for three frames using Stop-and-Wait ARQ protocol. Assume 0 and 1 as the possible sequence numbers. and any one ACK frame being lost. 5

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(b) Bit stuff the following data stream :

0 0 0 1 1 1 1 1 1 1 1 0 0 1 1 1 1 1 1
1 1 1 1 1 0 0 0 0 1 1 1 1 1. 2

(c) The following data fragment occurs in the middle of a data stream for which the byte stuffing algorithm is used- A B ESC ESC C ESC FLAG FLAG D. What is the output after stuffing ? 3

(d) What is HDLC ? Describe the frames defined by HDLC. What is the multiplexing technique used in the transmission of ATM cells ? 7+3=10

3. (a) Find the range of addresses and the size of the following block - 123.56.77.32/29. 5

(b) The size of the option field of an IPv4 datagram is 20 bytes. What is the value of HLEN ? What is the value in binary ? 3

(c) A host is sending 250 datagrams to another host. If the identification number of the first datagram is 2105, what is the identification number of the last in IPv4. 2

(d) Draw a neat diagram of IPv4 datagram header format. Explain *Identification, fragmentation offset* and *time to live fields.* 3+7=10

4. (a) Describe the various error reporting messages handled by ICMP. 8

(b) Describe internet as a datagram switching network. 6

(c) Distinguish between : 6

(i) Hub and Switch

(ii) Repeater and Bridge.

5. (a) What is Domain Name System (DNS) ? Why do we need a DNS system when we can directly use an IP address ? 4+2=6

(b) Which fields of the IPv4 header do change from router to router ? 3

(c) Describe the architecture of Asynchronous Transfer Mode (ATM) technology. Explain its various layers. 5+6=11

6. (a) What do you mean by resolution and resolver ? Differentiate and explain recursive and iterative resolution. 4+8=12

(b) What are the differences between TCP and IP ? 3

(c) Describe the architecture of World Wide Web (WWW). 5

7. Write short notes on : 4×5=20

(i) Checksum for error detection

(ii) Maximum Transfer Unit (MTU)

(iii) HTTP

(iv) IPv6

(v) Dynamic routing table.