Maulana Abul Kalam Azad University
of Technology, West Bengal

MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : BCAE-601A

ADVANCED NETWORKING AND COMMUNICATION

Time Allotted : 3 Hours   Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : $10 \times 1 = 10$

    i)   When a host knows its physical address but not its IP address, it can use

        a)   RARP   b)   ICMP

        c)   ARP   d)   IGMP.

    ii) The total number of links required to connect *n* devices using Mesh topology is

        a) 2^n b) $n(n + 1)/2$

        c) $n(n - 1)/2$ d) n^2.

iii) More cabling is needed in

    a) Mesh Topology   b) Star Topology

    c) Ring Topology   d) Bus Topology.

iv) Which one is connection oriented ?

    a) TCP   b) UDP

    c) IP   d) ARP.

v) In HDLC insert a 0 bit after .... consecutive 1 bits in the message data.

    a) 4   b) 6

    c) 5   d) 7.

vi) The Hamming code is used for

    a) Error detection

    b) Error correction

    c) Error encapsulation

    d) both (a) and (b).

vii) Pure ALOHA has a maximum efficiency of

    a) 18%   b) 37%

    c) 10%   d) none of these.

viii) If user A wants to send a message to user B confidentially, the plain text is encrypted with the public key of

    a) A   b) B

    c) both A and B   d) either A or B.

ix) Framing is done in .... layer.

    a) Physical   b) Data link

    c) Transport   d) Network.

x) In FDDI, data normally travels on

    a) Primary ring   b) Secondary ring

    c) both the rings   d) neither ring.

xi) In sliding window protocol if the window size is 64, what is the range of number ?

   a)   0 to 63   · b)   0 to 64

   c)   1 to 63   d)   None of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following.   3 × 5 = 15

2. Describe the functions of data link layer and network layer of OSI reference model.

3. Compare IP addressing with MAC addressing.

4. Explain ALOHA and slotted ALOHA and compare them.

5. Explain Leaky Bucket algorithm for congestion control.

6. Explain Go Back N request in flow and error control.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following.   3 × 15 = 45

7. a) Differentiate between Link State and Distance Vector routing algorithms.   5

   b) Distinguish between adapting routing and fixed routing.   5

   c) How does Manchester encoding differ from differential Manchester encoding ?   5

8. a) Suppose a system uses Stop and Wait protocol with propagation delay 20 ms. If the frame size is 160 bits and bandwidth is 4 kbps then calculate channel utilization or efficiency.   5

   b) A 10 bit data bit block 011101010111 is to be sent using hamming code for error detection and correction. Show how the receiver corrects an error that occurs in 6th bit position from right.   5

c) Applying CRC algorithm, determine the checksum and the transmitted frame for the bit stream 11010111 and for the generator polynomial $x^3 + x^2 + 1$.   5

9. a) What is pulse code modulation ? Explain how it is used to convert analog signal into digital format.   5

   b) Compare IPv4 with IPv6.   5

   c) Explain NRZ-I encoding with an example.   5

10. a) State the basic difference between TCP and UDP.   5

   b) What is Protocol Data Unit (PDU) and what does it contain ?   2 + 3

   c) Differentiate between circuit switching and packet switching.   5

11. Write short notes on any *three* of the following :   3 × 5

   a) VLAN

   b) DNS

   c) Bit rate and Baud rate

   d) Subnetting

   e) RSA.

————————