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 the following : $10 \times 1 = 10$

   i) Which error detection method involves polynomials ?

   a) LRC b) VRC

   c) CRC d) None of these.

   ii) For six subnets in class B network, the subnet mask will be

   a) 255.255.192.0 b) 255.255.240.0

   c) 255.255.224.0 d) none of these.

iii) Go-Back *N* and Stop-and-Wait ARQ are the techniques of

a) Flow control b) Sliding window

c) Congestion control d) none of these.

iv) In OFC, the inner core is ..... the cladding.

a) more dense than b) less dense than

c) same density with d) none of these.

v) To calculate the total number of bytes in the TCP header, the HLEN field is to be multiplied by

a) 2 b) 4

c) 8 d) none of these.

vi) Bipolar encoding uses

a) two voltage levels b) three voltage levels

c) one voltage level d) none of these.

vii) Which one of the following is an exterior routing protocol ?

a) RIP b) OSPF

c) BGP d) None of these.

viii) Microwaves are used for

a) Unicast communication

b) Multicast communication

c) both (a) and (b)

d) none of these.

ix) A Firewall is

a) a form of virus

b) a screen saver with firing wall

c) used to protect computers from outside attack

d) none of these.

x) The data unit at the transport layer in the TCP/IP protocol stack is called a

a) segment b) datagram

c) frame d) none of these.

GROUP – B

(Short Answer Type Questions)

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

2. Discuss the B8ZS and HDB3 schemes with suitable examples.

3. a) What do you mean by bit stuffing and character stuffing ? 3

   b) A modem has a baud rate of 40 signals/seconds. If it is transmitted at the rate of 4800 bps, what is the coding rate ? 2

4. a) Differentiate between encoding and modulation. 2

   b) Draw signal representation using NRZ-I and Manchester encoding schemes for a bit pattern 10111010001. 3

5. Describe the format of an ATM cell.

6. Why is the performance of slotted ALOHA better than pure ALOHA ?

7. Briefly explain the different policies that can prevent congestion.

GROUP – C
(Long Answer Type Questions)

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

8. a) An ISP is granted a block of addresses starting with 120.60.4.0/22. The ISP needs to distribute these blocks to 100 organisations with each organisation receiving just eight addresses.
Design the sub-blocks and give the slash notation for each sub-block. Find out how many addresses are still available after these allocations. 11

   b) What is a transparent bridge ? 4

9. Write short notes on any *three* of the following : 3 × 5
   a) RIP
   b) Three-way Handshake protocol
   c) Circuit switching
   d) ISDN.

10. a) Why do we need a DNS system when we can directly use an IP address ? 5

    b) Differentiate between 'Symmetric Key Cryptography' and 'Asymmetric Key Cryptography'. 5

    c) Explain the RSA algorithm. 5

11. a) Differentiate between TCP and UDP. 6

    b) Six channels, each with a 90 kHz bandwidth, are to be multiplexed together. What is the minimum bandwidth of the link if there is a need for a guard band of 5 kHz between the channels to prevent interference ? 4

    c) Distinguish between Virtual Circuit and Datagram Subnet. 5

12. Explain OSI model. Compare OSI model with TCP/IP protocol stack. 8 + 7