WEST BENGAL UNIVERSITY OF TECHNOLOGY

CS-602

COMPUTER NETWORKS

Time Allotted: 3 Hours | Full Marks: 70

The questions are of equal value.
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. Answer any *ten* questions. 10×1 = 10

(i) Remote login is a function performed by

(A) Physical Layer (B) Network Layer
(C) Presentation Layer (D) Application Layer

(ii) Error Control activity is performed by

(A) Data Link Layer (B) Network Layer
(C) Transport Layer (D) Session Layer

(iii) Which transmission is highly susceptible to noise interference?

(A) ASK (B) FSK
(C) PSK (D) QAM

(iv) Pick the odd one out from the following

(A) 2D Parity Check (B) CRC
(C) Hamming Code (D) Checksum

(v) HDLC is a

(A) bit oriented protocol (B) byte oriented protocol
(C) both (A) and (B) (D) can't say

(vi) Token passing is a technique applied in

(A) Data Link Layer (B) Transport Layer

(C) Physical Layer (D) Presentation layer

(vii) 10 Base-FL is a version of

(A) Ethernet (B) Token Bus

(C) Token Ring (D) Wireless LAN

(viii) IPv6 address is having a length of

(A) 16 bit (B) 32 bit

(C) 64 bit (D) 128 bit

(ix) The protocol that maps a physical (MAC) address to the corresponding logical address is

(A) ARP (B) RARP

(C) ICMP (D) IMAP4

(x) Which of the following protocols is based on the concept of Link State Routing?

(A) RIP (B) OSPF

(C) BGP (D) DVMRP

(xi) Which of the following is a technique to improve Quality of Service?

(A) Traffic Shaping (B) Resource Reservation

(C) Admission Control (D) All of the above

(xii) A _____ certifies the binding between a public key and its owner

(A) KDC (B) CA

(C) TLS (D) Firewall

GROUP B
(Short Answer Type Questions)

Answer any *three* questions. 3×5 = 15

2. (a) A signal has four data levels with a pulse duration of 1 ms. Calculate the pulse rate and bit rate of the signal. 2+1+2

(b) What do you mean by line coding? For a signal represented by 01001110 draw the patterns using the schemes: NRZ-L & NRZ-I.

3. (a) We want to digitize the human voice. What is the bit rate, assuming 8 bits per sample? 2+3
(b) Discuss about various transmission impairments.

4. (a) What is inverse TDM? 2+3
(b) Discuss about data transparency and bit stuffing in case of HDLC.

5. An ISP is granted a block of addresses starting with 190.100.0.0/16. The ISP needs to distribute these addresses to three groups of customers as follows: 5
(a) The 1st group has 64 customers; each needs 256 addresses.
(b) The 2nd group has 128 customers; each needs 128 addresses.
(c) The 3rd group has 128 customers; each needs 64 addresses.
Design the subblocks and give the slash notation for each subblock.

6. (a) Differentiate between symmetric and asymmetric key cryptography. 3+2
(b) What do you mean by Key Distribution Centre (KDC)?

GROUP C
(Long Answer Type Questions)

Answer any *three* questions. 3×15 = 45

7. (a) What do you mean by Forward Error Correction (FEC)? Discuss in detail 3+4+(2+2+4)
(b) The code 11110101 was received. Using the Hamming Code method find out what was the original code sent.
(c) In case of Stop-And- Wait ARQ, with the help of suitable diagrams discuss the operations performed on the following situations:
(i) Lost or damaged frame
(ii) Lost Acknowledgement
(iii) Delayed Acknowledgement

8. (a) Discuss in detail about the connection establishment procedure performed by LCP with the help of various LCP packets. 4+3+3+(2+3)
   (b) Explain in detail the state transition diagram of PPP.
   (c) Discuss the mechanism for authentication provided by Challenge Handshake Authentication Protocol.
   (d) Discuss the concept of sliding window in detail with the help of an example. How does HDLC perform flow control?

9. (a) Discuss in detail about the mechanism of multiple access provided by pure ALOHA. Why the efficiency of slotted ALOHA gets doubled as compared to pure ALOHA? Explain. (5+2)+3+5
   (b) Discuss about the various persistence strategies provided by CSMA.
   (c) Explain Distance Vector Routing with a suitable example.

10. (a) What is CIDR notation? What is its significance in case of classless addressing? 2+1+4+(6+2)
   (b) What do you mean by a private address? What is NAT?
   (c) What do you mean by flow characteristics? Explain in detail. What is admission control?

11. Write short notes on any *three* of the following: 3×5
   (a) FDM
   (b) Twisted Pair Cables
   (c) Traditional Ethernet
   (d) CDMA
   (e) Firewall