MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : IT-602

COMPUTER NETWORKING

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 × 1 = 10

i) The four basic elements of any communication system include
   a) peer-to-peer, videoconferencing, online photo-conferencing and net optical
   b) sending and receiving devices, communication channel, connection device and data transmission specifications
   c) telephone lines, coaxial cables, fibre-optics cables and communication channel
   d) software, hardware, communication channel and network.

ii) Which of the following IP Network addresses is a reserved address ?
   a) 127.0.0.0 b) 130.50.0.0
   c) 4.0.0.0. d) None of these.

 [Turn over

iii) A communication channel that is made up of a single copper core with a ground sheath around it is called a
   a) twisted pair channels
   b) microwave
   c) coaxial cable
   d) fibre-optic cable.

iv) Most Web-enabled devices follow a standard known as
   a) FireWire b) Bluetooth
   c) TCP/IP d) Wi-Fi.

v) The capacity of a communication channel is measured in
   a) bandwidth b) bit capacity
   c) baud rate d) data flow.

vi) The systems developed to automatically translate text-based addresses to numeric IP addresses is called
   a) DSL b) DNS
   c) SNL d) SDN.

vii) In the "Go-Back-N" ARQ mechanism, the maximum window size for a k-bit sequence number field in information frames is
   a) k + 1 b) 2k
   c) 2k – 1 d) none of these.

viii) Which of the following is not a WAN technology ?
   a) X.25 b) frame relay
   c) TCP/IP d) none of these.

ix) What is the bandwidth of a signal that ranges from 35 kHz to 95 kHz ?
   a) 130 kHz b) 60 kHz
   c) 35 kHz d) 95 kHz.

x) A typical digital telephone channel in TDM circuits is allocated a speed of

a) 8 kbps b) 64 kbps

c) 1·544 Mbps d) none of these.

GROUP – B
(Short Answer Type Questions)

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

2. Explain why CSMA/CD protocol cannot be used in wireless LAN.
3. Code word 1110101 is received at the receiver end. Using 7 bit even parity hamming code, detect the position of the error and find the correct data.
4. What is Bluetooth technology ? Why is it named so ? What is the difference between piconet and scatternet ? 1 + 4
5. a) What is LOS ?
   b) What are the differences between parallel and serial transmission ? 2 + 3
6. Enumerate the differences among FDM, TDM and WDM.

GROUP – C
(Long Answer Type Questions)

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

7. a) What are the advantages and disadvantages of circuit switching technique over packet switching technique ? Highlight the differences between datagram and virtual circuit approaches. 5 + 5
   b) A circuit switched network involves 5 switching nodes. Each node takes 2 sec and 0.2 sec for establishing and releasing connections respectively. If data transfer rate is 2400 bps, find the data transfer time for a message that is 300 bytes long. 5

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8. What do you mean by active and passive attacks ? Write down their categories with explanation. Write down the security services that are provided by OSI security model. 4 + 4 + 7
9. a) The code 11110101101 was received. Using the Hamming code algorithm, find the original code sent. 6
   b) Given a 10 bit sequence 1010011110 and a divisor polynomial $x^3 + x^2 + 1$, find the CRC. Check your answer. 6
   c) Write down the main functions of network layer. 3
10. a) A company is granted the site address 192.168.100.0, the company needs 10 subnets. Design the subnets (which include subnet mask, number of subnets, number of hosts in each subnet, first and last address of each subnet). 5
    b) Explain with diagram, how lost frame, delayed and lost acknowledgements are handled in Go-Back-N-ARQ. 5
    c) Discuss CSMA/CA with the help of a flowchart. 5
11. Write short notes on any *three* of the following : 3 × 5
    a) Guided media
    b) Optical fibre
    c) Cryptography *vs* Steganography
    d) ICMP
    e) DNS.