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Paper Code : ES-CS701/OE-EE 702 C/OE-EEE 701 B Computer Network

UPID : 007591

Time Allotted : 3 Hours *Full Marks :70*

The Figures in the margin indicate full marks.
Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer *any ten* of the following : [1 x 10 = 10]

(I) Automatic repeat request error management mechanism is provided by _____.
a) logical link control sublayer
b) media access control sublayer
c) network interface control sublayer
d) application access control sublayer

(II) The network layer protocol for internet is _____.
a) ethernet
b) internet protocol
c) hypertext transfer protocol
d) file transfer protocol

(III) The packet of information at the application layer is called _____.
a) Packet
b) Message
c) Segment
d) Frame

(IV) A _____ is a device that forwards packets between networks by processing the routing information included in the packet.
a) router
b) hub
c) bridge
d) repeater

(V) Which of this is not a guided media?
a) Fiber optical cable
b) Coaxial cable
c) Wireless LAN
d) Copper wire

(VI) Which sublayer of the data link layer performs data link functions that depend upon the type of medium?
a) logical link control sublayer
b) media access control sublayer
c) network interface control sublayer
d) error control sublayer

(VII) A 4 byte IP address consists of _____.
a) only network address
b) only host address
c) network address & host address
d) network address & MAC address

(VIII) Pick the odd one out.
a) File transfer
b) File download
c) E-mail
d) CRC

(IX) Which of the following routing algorithms can be used for network layer design?
a) shortest path algorithm
b) distance vector routing

c) link state routing
d) all of the mentioned

(x) Multiplexing is used in _____.
a) Packet switching
b) Circuit switching
c) Data switching
d) Packet & Circuit switching

(xi) An Aloha network uses an 18.2 kbps channel for sending message packets of 100 bits long size. Calculate the maximum throughput.
a) 0.5999
b) 0.6900
c) 0.6027
d) 0.5027

(xii) Propagation delay depends on _____.
a) Packet length
b) Transmission rate
c) Distance between the routers
d) Speed of the CPU

Group-B (Short Answer Type Question)

Answer *any three* of the following : [5 x 3 = 15]

2. Differentiate between Guided and Unguided transmission media. [5]
3. What is HTTP ? Explain the concept of digital signature. [5]
4. Compare the performances of Slotted Aloha & Pure Aloha. [5]
5. What is IPv6? Explain its advantages over IPv4. [5]
6. A 20 Kbps satellite link has a propagation delay of 400 ms. The transmitter employs the "go back n ARQ" scheme with n set to 10. Assuming that each frame is 100 bytes long, What is the maximum data rate possible? [5]

Group-C (Long Answer Type Question)

Answer *any three* of the following : [15 x 3 = 45]

7. What is TCP/IP model ? Explain the functions and protocols of each layer. Explain LAN & WAN. [2+10+3]
8. (a) What does routing metric mean? What are the metrics used in determining the best path for a routing protocol? [2+3]
   (b) What are the advantages of using UDP over TCP? Discuss Leaky Bucket Algorithm. [4+6]
9. How is CSMA a clear advantage over ALOHA ? How is it further improved by implementing CSMA/CD? Discuss CSMA/CD with a flowchart. What is bit stuffing ? [2+3+8+2]
10. What are the advantages and disadvantages of using Distance Vector Routing algorithm ? How does ARP & RARP work in TCP/IP ? What is private IP address? Also state the utilities of private IP addresses. [5+6+4]
11. (a) Let the ASCII character M (1001101) has to be transmitted from source to destination. Let the receiver receives the data with any one bit corrupted. Use the Hamming code to identify the corrupted bit position so that it can be automatically corrected by the receiver to avoid retransmission. [8]
    (b) Explain with diagram, how the lost frame, delayed and lost acknowledgements are handled in Go-Back-N-ARQ. [7]

*** END OF PAPER ***