UG Mid Sem Exam
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Q.1.

a) Ans) OSI Model vs TCP/IP model:

PROS:

(i) In OSI model, the transport layer guarantees the delivery of packets, but in TCP/IP model, the transport layer does not guarantee delivery of packets.

(ii) Protocols in OSI model are easily replaced as the technology changes, whereas the protocols in TCP/IP are not easy to replace.

CONS:

(i) The OSI model does not have any mechanism for providing a reliable and secure connection for data transmission, while TCP/IP model has a 3-way handshake mechanism for providing a reliable and secure connection link over the network.

(ii) The OSI model is purely a theoritical model that does not consider the availability of appropriate technology, while TCP/IP is a practical model and can be practically implemented.

1 b) ans) There are four components of delay:

i) Processing delay: It is the time associated with the system analysing a packet header and determining where the packet must be sent.
Example: Time taken by router to process packet header.

ii) Queueing delay: It is the time between a packet being queued and it being sent.
Example: Time a packet is put in queue when it arrives faster than the router can process.

iii) Transmission delay: It is the time needed to push a packet's data bits into the wire.
Example: Time it takes for the router to push all packets into the wire.

iv) Propagation delay: It is the time associated with the first bit of the packet travelling from the sending endpoint to the receiving endpoint.
Example: The packet sent by the sender is received by the receiver. There takes some for the packet to travel. This is an example of propagation delay over distance by speed.

Q.3.
Ans:

01111110 11111001 01101101 10011010 11001111 10101011

10011111 01101111 110

i) Ans) for above frame sequence, 2 bytes are used for address.

ii) Ans) The receiver, in the above frame sequence, receives only 8 bits of the actual data.

iii) Ans) If the receiver was earlier ack the receipt of 5 frames,
Then frames received by sender = 1+2+1+2+1
= 7 bytes.
∴ Total frame received = 5 frames

iv) Ans) The bit stuffing is done 3 times in this frame.

v) Ans) It is information field.

Q.2.

b) Ans) There are three persistent CSMA schemes:

(i) 0-persistent CSMA: In this type, the station that has frames to send, only the station senses for the channel.

(ii) 1-persistent CSMA: In this type, the station continuously senses the channel to check its state, if it can transfer the data or not.

(iii) p-persistent CSMA: It is the hybrid of 0- and 1-persistent. In this type, when the station is ready to send the frames, it will sense the channel, and if the channel is found to be busy, the channel will wait for next slot.

Q.2.

a) Ans) Given, $n+1$ rows.

So, 1 extra row is there.

Since 1 parity bit can detect 1 error,

So, n parity bits can detect n bit error.

Q.4o

Ans: Given, A → 10101110 → transmits 1 bit
B → 10010010 → transmits 1 bit
C → 10010101 → transmits 0 bit

A encodes same → 10101110
B encodes as same → 10010010
~~C encodes as same~~
C encodes in reverse → 01101010

Signal Codes,

A → +1, -1, +1, -1, +1, +1, +1, -1
B → +1, -1, -1, +1, -1, -1, +1, -1
C → -1, +1, +1, -1, +1, -1, +1, -1

Therefore,

Signal received is:

+1, -1, +1, -1, +1, -1, +3, -3, +1, -1, +1, -1,
+1, -1, +3, -3.