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Sem- IV

Date - 02/03/21

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Mid term Exam
MCA - 622 Computer Network

(Q.3) (A) Adding the 4-bit words yields
1001 + 1100 + 1010 + 0011 = 100010.
The carry is added to the LSBs. 0100.
The one's complement value is then 1011, which is checksum.

Adding the data and checksum yields
1001 + 1100 + 1010 + 0011 + 1011 = 10111
which gives 1111 (carry) and thus (0000) negation

(Q.4)

(A)

MAC address	IP address
(1) MAC Address stands for Media Access control Address	(2) IP address stands for Internet protocol address.
(2) It ensures that physical address of computer is unique	(2) IP address is a logical address of the computer and is used to uniquely locate computer connected via a network.
(3) It is a six byte hexadecimal number	(3) It is of 4 byte or 16 Byte.

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Circuit switching	Packet switching
(1) In circuit switching, each data unit know the entire path address which is provided by the source	(1) Each data unit just know the final destination address intermediate path is decided by the routers
(2) Resource reservation is the feature of circuit switching because path is fixed for data transmission	(2) There is no resource reservation because bandwidth is shared among users.

TDM	FDM
(1) TDM stands for time division multiplexing	(1) stands for frequency division multiplexing
(2) TDM works with digital signals as well as analog signals	(2) while FDM works with only analog signals.

Bandwidth	Band Rate
(1) Bandwidth of a digital signal is the number of bits transmitted per second	(1) Band rate is the number of signalling elements transmitted per second.

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100BASE-T4

(1) It uses 4 pairs of category 3 unshielded twisted pair wires, and the maximum distance is 100 meters. with maximum diameter of the network : 200 M.

100BASE-TX.

(1) It uses two pairs of category 5 unshielded twisted-pair cables with impedance of 100 ohms. The maximum transmission distance is 100 metres

(Q.2)

$$x^3+1 \;\overline{)\; x^7+x^6+x^3+1 \;(\; x^4+x^3+x}$$

$x^7 + x^4$

$x^6 + x^4 + x^3 + 1$

$x^6 + x^3$

$x^4 + 1$

$x^4 + x$

$x + 1$

$M(x) = x^7 + x^6 + x^3 + 1$

$G(x) = x^3 + 1$

$G(x) = 1 \cdot x^3 + 0 \cdot x^2 + 0 \cdot x^1 + 1 \cdot x^0$

$G(x) = 1\ 0\ 0\ 1$

$M(x) = x^7 + x^6 + x^3 + 1$

$= 1 \cdot x^7 + 1 \cdot x^6 + 0 \cdot x^5 + 0 \cdot x^4 + 1 \cdot x^3 + 0 \cdot x^2 + 0 \cdot x + 1 \cdot x^0$

Senders.

$M(x) = 11001001$

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```
                 11010011
1001 ) 11001001000
       1001
       01011
        1001
        00100
            0
          1000
          1001
          0001100
              1001
              0101
              1001
              0011   Remainder
```

Receiver

transmitted → 11001001011

```
                 11010011
1001 ) 11001001011
       1001
        01011
         1011
         001000
            1001
            0001101
                1101
                01001
                 1001
                 0000   → Remainder
```

No error occurs

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Q.3(b) A protocol which supports one directional flow of data and assumed to be error free is stop and wait protocol

(1) The error control mechanism is used so that the received data should be exactly same whatever sender has send the data.

(2) The error mechanism is divided into two categories.
(1) stop and (2) wait ARQ

Senders slide :-

(Rule-1) sender can send one data packet at a time

(Rule-2) : Senders can send the next packet only when it receives the acknowledgement from receiver of previous packet.

Receiver slide

Rule-1 : Receive & consume the data packet.

Rule-2 : when data packet is consumed receiver sends the acknowledgement of the senders.

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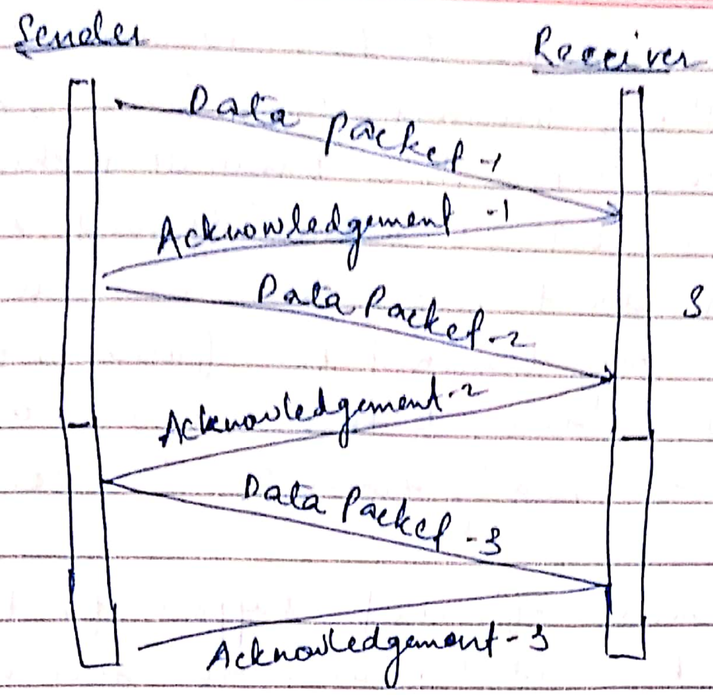
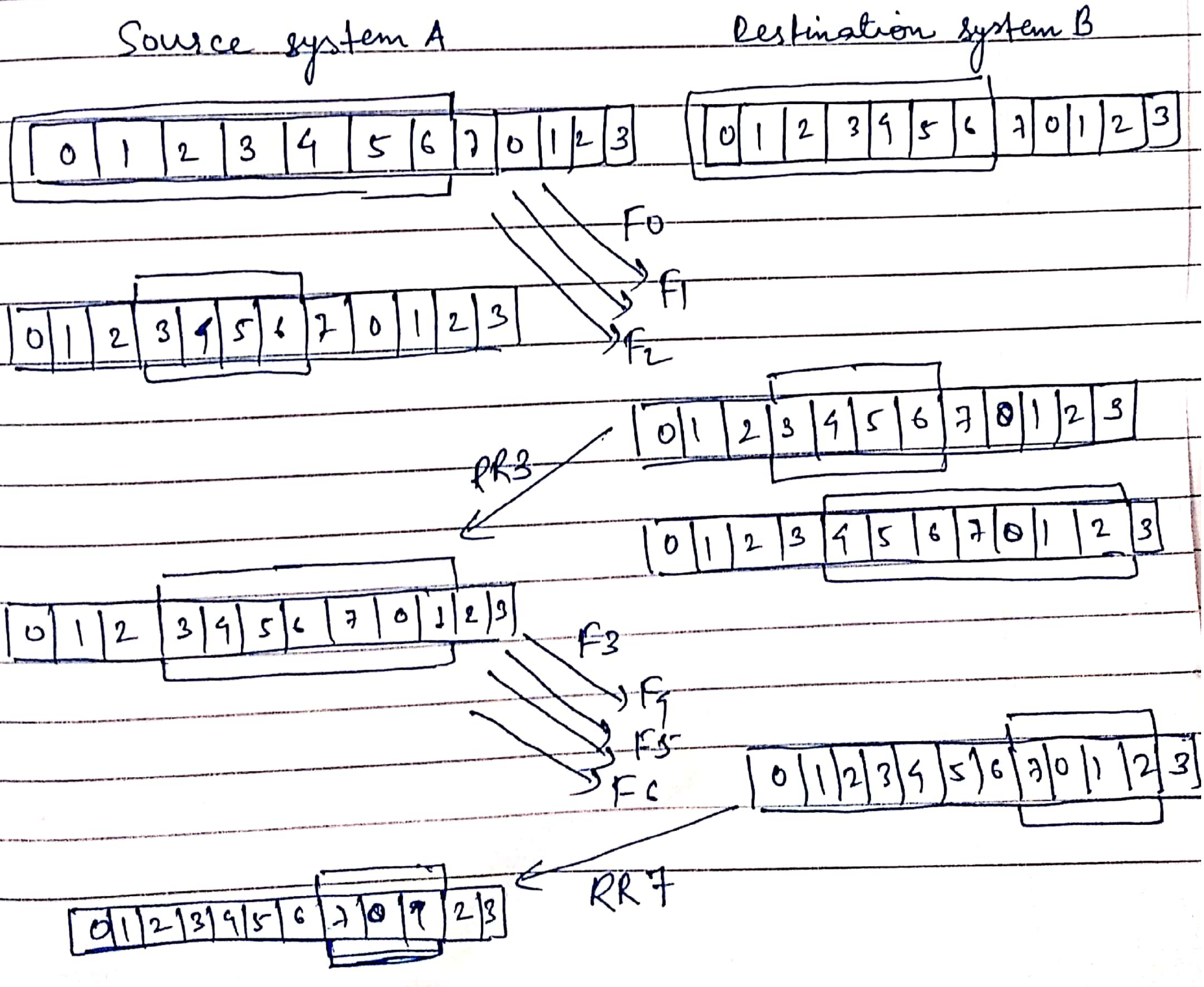
(2)



Stop and wait protocol.

(Q.2)



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Initially, A and B have windows including that A may transmit seven frames, beginning with frame 0 (F0). After transmitting three frames (F0, F1, F2) without acknowledgement, A has shrunk its window to four frames. The window indicates that A may transmit four frames, beginning with frame no. 3. B then transmit an RR3 (received ready frame 3) to receive frame number.

To provide efficient support for this requirement piggibacking is typically the technique of temporarily delaying acknowledgement so that they can be hooked onto next outgoing data frame.