

Mid Semester Examination (6th Sem), 2022

- ↪ Subject Name : → Computer Networks.
- ↪ Subject Code : → IT3202
- ↪ Date of Examination : → 08.03.2022
- ↪ Name : → Aniket Majhi
- ↪ Examination Roll Number : → 510819019
- ↪ Gsuite ID : → 510819019.aniket@students.iiests.ac.in
- ↪ Number of sheets uploaded : → 7,

- (1.) ☐ The reason of using optical signals in fiber optics cable is that, optical signals have higher frequency.

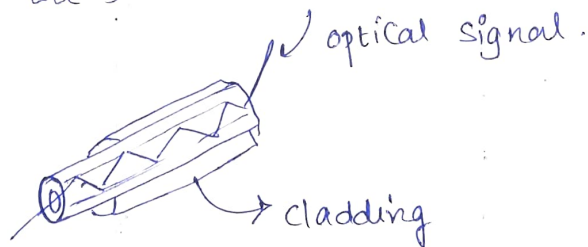
And we also know that,

$$\text{Wave length} \propto \frac{1}{\text{frequency}}.$$

So, the wave length of optical signals is very short, and optical fibers are made from such materials that have low absorption at shorter wavelength so attenuation is lesser here.

- ☐ Purpose of using cladding: \rightarrow

The main function of the cladding is to provide a lower refractive index at the core interface in order to cause reflection within the core so that light waves are transmitted through the fiber.



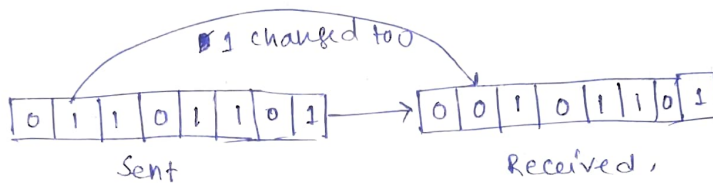
- (2.) We know that a wave at a single frequency does not constitute a "bandwidth".

So, a sine wave with frequency 10 Hz or 200 Hz have 0 bandwidth.

- ⑨ Single bit error : \rightarrow In this type of error, only a single bit of the given data is changed either from 0 to 1 or 1 to 0.

Example : \rightarrow

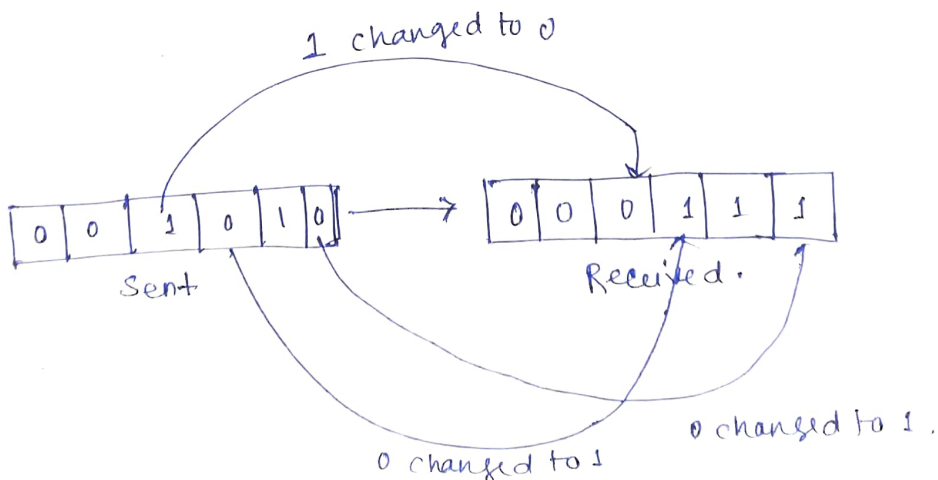
Let's the data \rightarrow 01101101.



- Burst error : \rightarrow

When two or more bits in the data unit have changed ~~for~~ either from 0 to 1 or 1 to 0.

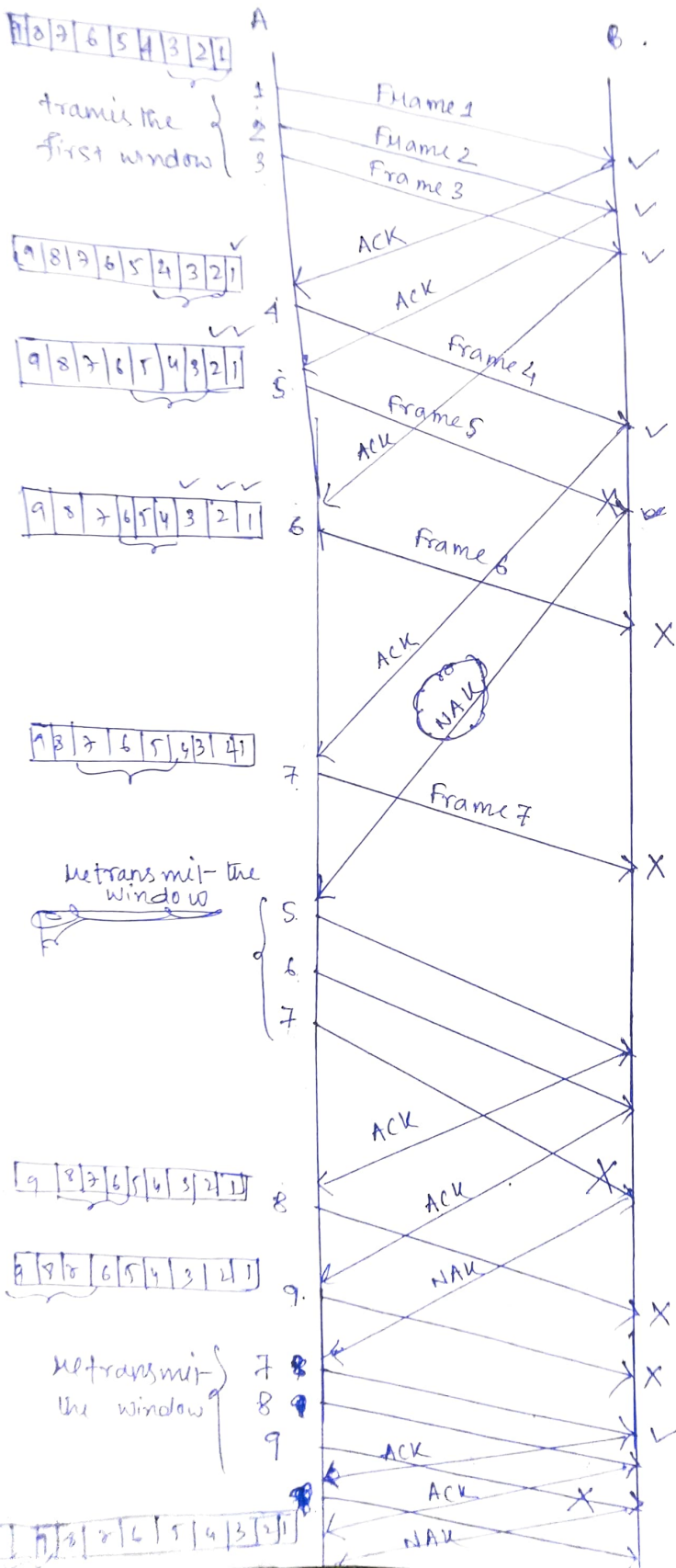
Example : \rightarrow

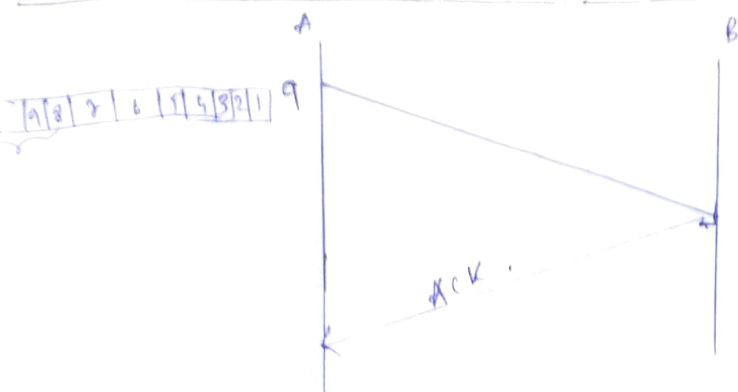


4

$$W_s \text{ (window size)} = 3.$$

Number of packets = 9





So, As we can see ^{see} there are total 16 frame needs to be sent.

⑤

The Polynomial \rightarrow

$$\begin{aligned}
 & x^8 + x^2 + 1 \\
 & = 1 \cdot x^8 + 0 \cdot x^7 + 0 \cdot x^6 + 0 \cdot x^5 + 0 \cdot x^4 + 0 \cdot x^3 + 1 \cdot x^2 + 1 \cdot x + 1 \\
 & = 100000111
 \end{aligned}$$

⑤

The probability of success = 0.8.

NOW, $E =$

$$E = 0.8 \times 1 + 0.8 \times 1 + \dots n \text{ times}$$

here, $E = 100$.

$$\therefore 0.8 \times n = 100$$

$$\therefore n = 125$$

\therefore So, to transmit 100 packets we have to transmit 125 packets.

18
(6)

Data — 1011 0010 0100 1011

CRC Pol — $x^8 + x^2 + x + 1$

generator — 100000111

CRC

```
100000111 ) 1011 0010 0100 1011 00000000
              1000 0011 1
              -----
              0110000111000
                10000000111
                -----
                1000 100 10
                1000 00111
                -----
                0010 110 11
                1000 00111
                -----
                1110 11100
                1000000111
                -----
                110 110 110
                100000 111
                -----
                1011 000000
                10000000111
                -----
                1100 1010
                1000000111
                -----
                10010011
```

CRC → 100 10011

∴ Data to be Sent —

1011 0010 0100 1011 10010011
CRC

11

Computer — 00 11 00 10 01 00 1011

10010011
CRC,

$$\begin{array}{r}
 100000111 \quad | \quad 0011001001001011 \\
 \hline
 100000111 \\
 \hline
 101100011 \\
 100000111 \\
 \hline
 110010010 \\
 100000111 \\
 \hline
 100101010 \\
 100000111 \\
 \hline
 110101011 \\
 100000111 \\
 \hline
 101100100 \\
 100000111 \\
 \hline
 110001110 \\
 100000111 \\
 \hline
 1000100010 \\
 100000111 \\
 \hline
 0000101011
 \end{array}$$

The remainder is not zero.

so, the error in data received is found by CRC.

7

NRZ

NRZI

Manchester

AMI

