6) signals are in the form of voltage, current, or photons in the guided media.	6) signals are in th of electromagnetic unguided media.
Ex:- twisted pair wires, coaxial cables, and optical fiber cables.	Ex:- microwave or ra and infrared light.
8) By adding more wires, the transmission capacity can be increased in guided media.	8) It is not possible obtain additional ca unguided media.
9) It sends out a signal that indicates which way to go.	* It does not ind way to travel.
10) For a shorter distance, this is the best option.	* For longer distan method is used.
11) It is unable to pass through walls.	* It can pass thr walls.

(4) Various types of transmission errors with exam

1) Single Bit error
2) Burst error

* In case of single bit error only one bit the data is corrupted and rest of all the b are received correctly.
* that means only one bit from the data uni changed either from 1 to 0 or 0 to 1.

Ex:- the data frame 1111 is sent over the tran line and at the receiver end the data fram received as 1011. the second bit is changed 1 to 0.

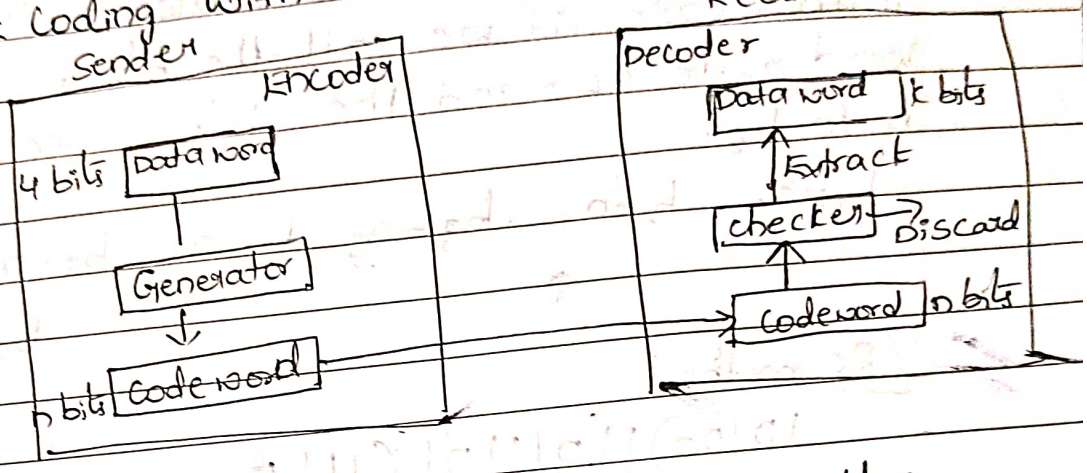
→ Single bit error most likely to occurs wh we send the data using parallel transmissio

Burst error

→ In case of Burst error, multiples bits are corrupted and changed..

Ex:- Suppose data sent is 1111, received 0001. three bit changed from 1 to 0.

⑤ Illustrate the process of error detection using Block coding with the help of neat diagram.



→ the following two conditions are met, the receiver can detect a change in the original code word.

* the receiver has a list of valid codewords.
* the original codeword has changed to an invalid one.

→ Figure shows the role of block coding in error detection. the sender creates code words out of datawords by using a generator that applies the rules and procedures of encoding. Each codeword sent to the receiver may change during transmission.

→ If the received codeword is the same as one of the valid codewords, the word is accepted; the corresponding dataword is extracted for use.

→ If the received codeword is not valid, it is discarded. However, if the codeword is corrupted during transmission but the received word still matches a valid codeword, the error remains undetected.

② short notes on cyclic codes

→ cyclic codes are special linear block codes with one extra property. In a cyclic code, if a codeword is cyclically shifted, the result is another codeword.

Ex:- if 1011000 is codeword and we cyclical left-shift, then 0110001 is also a codeword. In this case, if we call the bits in the first word a_0 to a_6, and the bits in the second b_0 to b_6.

$b_1 = a_0$ $b_2 = a_1$, $b_3 = a_2$, $b_4 = a_3$, $b_5 = a_4$, $b_6 = a_5$, $b_0 = a_6$

CRC method

```
10100)11011011(1110
      10100↓
      -----
       01111↓
        10100↓
        -----
        00101
         10100
         -----
         00001  → Remainder
```

codeword