

Assignment-5

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Answer to Q.N.1

Sky propagation differ from line of sight propagation.

① Sky propagation doesn't depend upon the range, distance or any other object which may occur between sender & receiver, on the contrary line of sight depends on the range, distance or object line of sight may be affected by the object if it is lying in between the sender and receiver.

2) Sky propagation is operated in the frequency range 2 to 30 MHz whereas line of sight operated in the range more than 30 MHz.

3) Sky propagation is mainly follow the contour of earth. On the otherhand line of sight propagation travel in straight line.

④ Sky propagation is used in radio or military communication whereas line of sight used in TV, Satellite, etc.

Answer to the Ques 2

Ba	ng	la	de	Rh
9261	6E67	6C61	646B	7368

Sender's site:

9261 : 0100001001100001

6E67 : 0110111001100101

6C61 : 0110111001100100

646B : 0110010001100001

7368 : 0001110100101001

0001110100101001

646B : 0110010001100001

7368 : 0001110100101001

7368 : 0001110100101001

7368 : 0001110100101001

Checksum

A's

Complement

0000

0011

0000

0000

0

B

0

8

Checksum of the Sender = 0B08

Receiving Side

4267 : 010000100110000 2

6E67 : 0110111001100100

6061 : 0110110001100002

646B : 011001001100001

7368 : 0111001101201000

Checksum : 0000101100001000

(A)

1111111111111111111111111111

There is no error, Since the rest
is all 1's

Ans to 3

There are 4 code words

Combinations will be $= {}^4C_2 = 6$

Pairs and their hamming distance
table

Pairs	hamming Dist
(00000, 01011)	3
(0, 00000, 10101)	3
(00000, 11110)	4
(01011, 10101)	4
(01011, 11110)	3
(10101, 11110)	3

There are 6 pairs

The minimum hamming distance here
 $= 3$

Answer to Q.N.- 4(i)

Codeword generated on the sender side,

Dataword to be sent = 11 01 01 01

[from given polynomial
place ones at powers]

Divisor = 1011 (from polynomial given for divisor)

$$\begin{array}{r} 11110110 \\ \hline 1011 \overline{)11010101000} \\ 1011 \\ \hline 1100 \\ 1011 \\ \hline 1111 \\ 1011 \\ \hline 1000 \\ 1011 \\ \hline 0111 \\ 0000 \\ \hline 1110 \\ 1011 \\ \hline 1010 \\ 1011 \\ \hline 1010 \\ 1011 \\ \hline 0010 \\ 0000 \\ \hline 010 \end{array}$$

Remainder is 010. Data code generated is 11010101010

4 (ii)

$$\begin{array}{r} 11110110 \\ \underline{1011} \quad \boxed{11010101001} \\ 1011 \\ \hline 1100 \\ 1011 \\ \hline 1111 \\ 1011 \\ \hline 1000 \\ 1011 \\ \hline 1110 \\ 1011 \\ \hline 1010 \\ 1011 \\ \hline 011 \end{array}$$

Since, we didn't get all 0's in' the remainder , the received codeword is incorrect.

Answer to the Ques

For error detection, $d_{min} = S+1$

$$\begin{aligned} &= 2+1 \\ &= 3 \end{aligned}$$

For correction of error, $d_{min} = 2t+1$

$$\begin{aligned} &= (2 \times 2)+1 \\ &= 5 \end{aligned}$$

Error detection, $d_{min} = S+1$

$$= 9+1 = 10$$

Error & correction, $d_{min} = 2t+1 = (2 \times 3)+1$

$$= 6+1 = 7$$

Error detection, $d_{min} = S+1 = 6+1 = 7$

Error correction, $d_{min} = 2t+1 = (2 \times 3)+1 = 7$

Answer to Q.N.-6

$$\boxed{x^3 + x^2}$$

$$\text{Dataword} = x^7 + x^6 + x^4 + x^2 + 1$$

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

$$= 11010101$$

$$\text{Divisor} = x^3 + x^2$$

$$= 1 \times x^3 + 0 \times x^2 + 1 \times x^1 + 1 \times x^0$$

$$\Rightarrow 1011$$

$$\begin{array}{r}
 111101110 \\
 \boxed{11010101000} \\
 1011 \\
 \hline
 1100 \\
 1011 \\
 \hline
 1111 \\
 1011 \\
 \hline
 1000 \\
 1011 \\
 \hline
 0111 \\
 0000 \\
 \hline
 1110 \\
 1011 \\
 \hline
 1010 \\
 1011 \\
 \hline
 0010 \\
 0000 \\
 \hline
 000
 \end{array}$$

Sender side Codeword

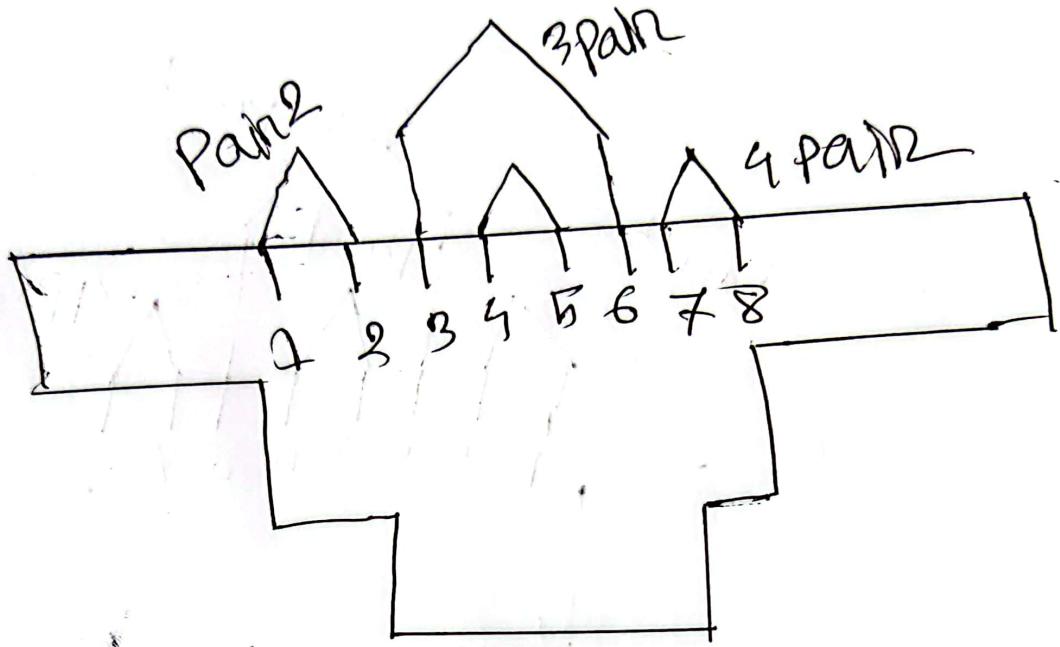
1101.01.01 010
Dataword CRC bits

$$\Rightarrow x^{10} + x^9 + x^7 + x^5 + x^3 + x$$

Answer to Q.7

Straight Through cable is a type of twisted pair used widely common in the Local Area Network(LAN):

They are used at switch and router connection; switch to computer connection, switch to server connection. The both ends of cable are of either T568 A (or T568B) standard.



here

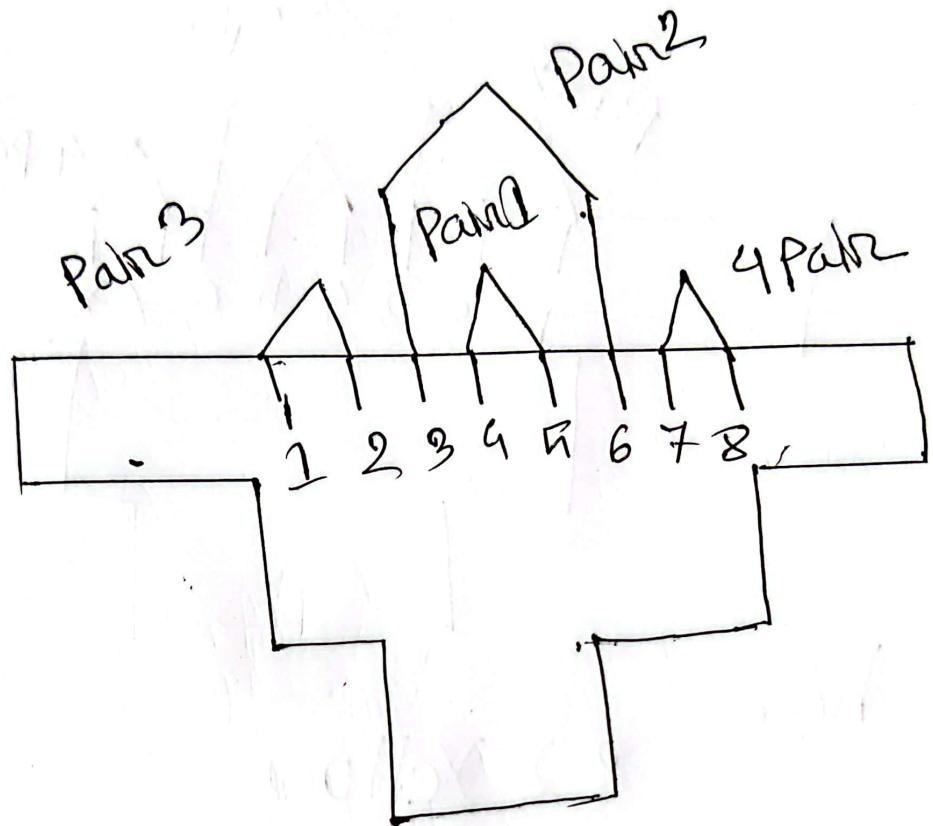
$2 \rightarrow$ yellow

$3 \rightarrow$ green

$1 \rightarrow$ blue

$4 \rightarrow$ brown

TIA68 wire standard



here $2 \rightarrow$ Yellow

$3 \rightarrow$ Green

$1 \rightarrow$ Blue

$2 \rightarrow$ Brown

— The 68A wire standard —

Ethernet crossover cable

It's also a twisted pair cable which is used at connecting computing device direct and together.

They are used at switch and switch, switch and hub, hub and hub, Router and router.. etc.

Their ends are one of T568A standard other is T568B standard.

T568A

T568B

Answer to Qn 8

The re are two types of propagation modes.

optie cabling

- i) Single mode propagation (SMP)
- ii) Multimode propagation (MM P)

Single Mode Propagation	Multimode Propagation
It has small core	1 It has large core
SMP used at large distance	2 MM P used at short distance
It has linear dispersion	3 It has great dispersion
It's cost highly	4 MM P mode is cheaper