Ans no: 2

1	2	3	4
A	M	I	N
D	N	E	E
D	S	B	O
O	K	S	L
I	K	E	A
S	W	O	R
D	N	E	E
D	S	A	W
H	E	T	S
T	O	N	E

3	4	1	2
I	N	A	M
E	E	D	N
B	O	D	S
S	L	O	K
E	A	I	K
O	R	S	W
E	E	D	N
A	W	D	S
T	S	H	E
N	E	T	O

∴ Row transposition cipher : ~~INEA~~

INAM EEDN BODS SLOK EAIK ORSW EEDN AWDS

TSHE NETO

Ans no: 1

Plain text = Winter is Coming.

W = 01 01 0 111

I = 01 00 1001

N = 01 00 1110

T = 0101 0100

E = 01 000 101

R = 01 01 0010

⎵ = 0010 0000

I = 0100 1001

S = 01 01 0011

⎵ = 00 1 00000

C = 01 001111

O = 01 00 1101

M = 01 001101

I = 01 00 10001

N = 01 001110

G = 01 000111

Block-1 =

0 1   0 1   0 1 1 1
0 1   0 0 1 0 0 1
0 1   0 0 1 1 1 0
0 1   0 1 0 1 0 0
0 1   0 0 0 1 0 0
0 1   0 1   0 0 1 0
0 0 1   0 0 0 0 0
0 1 0 0 1 0 0 1

Block 2 =

0 1   0 1   0 0   1 1
0 0   1 0 0 0   0 0
0 1   0 0 0 0   1 1
0 1   0 0 1 1   1 1
0 1   0 0 1 1 0   1
0 1   0 0 1 0 0 1
0 1   0 0 1 1 1 0
0 1   0 0 0 1 1 1

After using initial permutation

Block-1 =

1 0   1 1 1   1 1   1
0   0 1 0 1   0 0   1
0   0 0 1 1 1   0   1
1   0 0 0 0 0   1   1
0 0 0 0 0 0 0 0
0 1 0 0 0 0 0 0
1 0 0 0 0 1 1 0
0 0 1 0 0 0 0 1

Ans no: 3

Yes, DES uses a fiestel cipher structure in its design. The fiestel cipher is a symmetric structure used in the construction of block ciphers.

The fiestel structure involves dividing the block into two halves and then performing a series of rounds on these halve.

The fiestel structure provides DES with its security properties. The feistal structure allows for efficient decryption by using same algorithm in reverse, swapping the order of subkeys subkeys.