



CS302 spring 2012

Assignment No. 1_Solution

Q1

(a) Convert the binary number 11000110 to Gray code.

Solution:

11000110

Step 1:

(1)1000110 Copy most significant bit (on very left)

Ans:1

Step 2:

(1+1) 000110

Ans: 10

Step 3:

1 (1+0) 00110

Ans: 101

Step 4:

11 (0+0) 0110

Ans: 1010

Step 5:

110 (0+0) 110

Ans: 10100

Step 6:

1100 (0+1) 10

Ans: 101001

Step 7:

11000 (1+1) 0

Ans: 1010010

Step 8:

110001(1+0)

Ans: 10100101

Answer : 10100101 (Gray code)

(b) Convert The Gray code 10101111 to binary.

Solution:

10101111 www.vchowk.com

Step 1:

(1) 0101111 Copy most significant bit (on very left)

Ans:1

Step 2:

1(0)101111

+

(1)

Ans: 11

Step 3:

10(1)01111

+

1(1)

Ans: 110

Step 4:

101(0)1111

+

11(0)

Ans: 1100

Step 5:

1010(1)111

+

110(0)

Ans: 11001

Step 6:

10101(1)11

+

1100(1)

Ans: 110010

Step 7:

101011(1)1

+

11001(0)

Ans: 1100101

Step 8:

1010111(1)

+

110010(1)

Ans: 11001010

Answer: 11001010 (binary number)

Q2 Fill the empty columns in the table by performing each operation against each row.

Solution:

A	B	C	D	AND	OR	NAND	NOR
0	0	0	0	0	0	1	1
0	0	0	1	0	1	1	0
0	0	1	0	0	1	1	0
0	0	1	1	0	1	1	0
0	1	0	0	0	1	1	0
0	1	0	1	0	1	1	0
0	1	1	0	0	1	1	0
0	1	1	1	0	1	1	0
1	0	0	0	0	1	1	0
1	0	0	1	0	1	1	0
1	0	1	0	0	1	1	0
1	0	1	1	0	1	1	0
1	1	0	0	0	1	1	0
1	1	0	1	0	1	1	0
1	1	1	0	0	1	1	0
1	1	1	1	1	1	0	0