Date

No

Lab05_Task04

(a)

Binary inputs				Gray outputs			
B_1	B_2	B_3	B_4	G_1	G_2	G_3	G_4
0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	1
0	0	1	0	0	0	1	1
0	0	1	1	0	0	1	0
0	1	0	0	0	1	1	0
0	1	0	1	0	1	1	1
0	1	1	0	0	1	0	1
0	1	1	1	0	1	0	0
1	0	0	0	1	1	0	0
1	0	0	1	1	1	0	1
1	0	1	0	1	1	1	1
1	0	1	1	1	1	1	0
1	1	0	0	1	0	1	0
1	1	0	1	1	0	1	1
1	1	1	0	1	0	0	1
1	1	1	1	1	0	0	0

(b)

B_3 B_4 \ B_1 B_2	00	01	11	10
00	0	0	1	1
01	0	0	1	1
11	0	0	1	1
10	0	0	1	1

(i) K map for G_1

B3 B4 \ B1 B2	00	01	11	10
00	0	1	0	1
01	0	1	0	1
11	0	1	0	1
10	0	1	0	1

(ii) K map for G_2

B3B4 \ B1 B2	00	01	11	10
00	0	1	1	0
01	0	1	1	0
11	1	0	0	1
10	1	0	0	1

(iii) K map for G_3

B3 B4 \ B1 B2	00	01	11	10
00	0	0	0	0
01	1	1	1	1
11	0	0	0	0
10	1	1	1	1

(iv) K map for G_4

(c)

(i) For G1,

$$G1 = B1$$

(ii) for G2,

$$G2 = \overline{B1}\,B2 + B1\,\overline{B2}$$
$$= B1 \oplus B2$$

(iii) For G3,

$$G3 = \overline{B3}\,B2 + B3\,\overline{B2}$$
$$= B2 \oplus B3$$

(iv) For G4,

$$G4 = \overline{B3}B4 + B3\overline{B4}$$
$$= B3 \oplus B4$$

(d)