Parcial Matematicas Especiales

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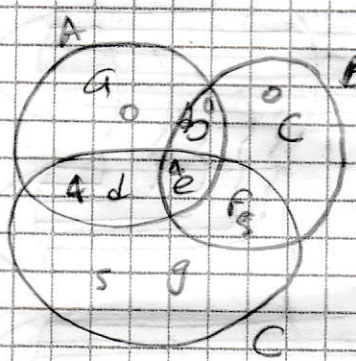
20172578049

1)



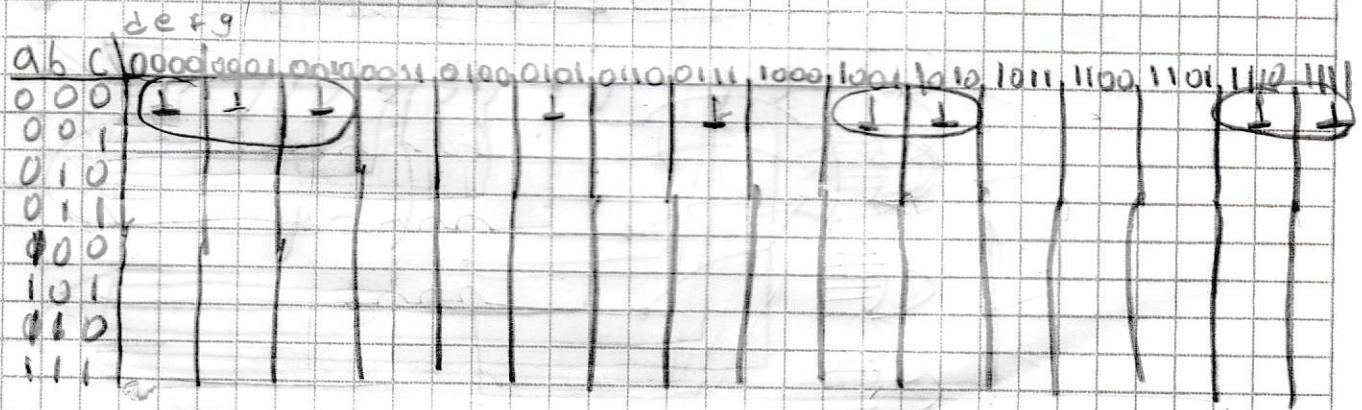
a) $F = \sum m(0, 1, 2, 5, 7, 9, 10, 14, 15)$

m	a	b	c	d	e	f	g	F
0	0	0	0	0	0	0	0	1
1	0	0	0	0	0	0	1	1
2	0	0	0	0	0	1	0	1
5	0	0	0	0	1	0	1	1
7	0	0	0	0	1	1	1	1
9	0	0	0	1	0	0	1	1
10	0	0	0	1	0	1	0	1
14	0	0	0	1	1	1	0	1
15	0	0	0	1	1	1	1	1

b)

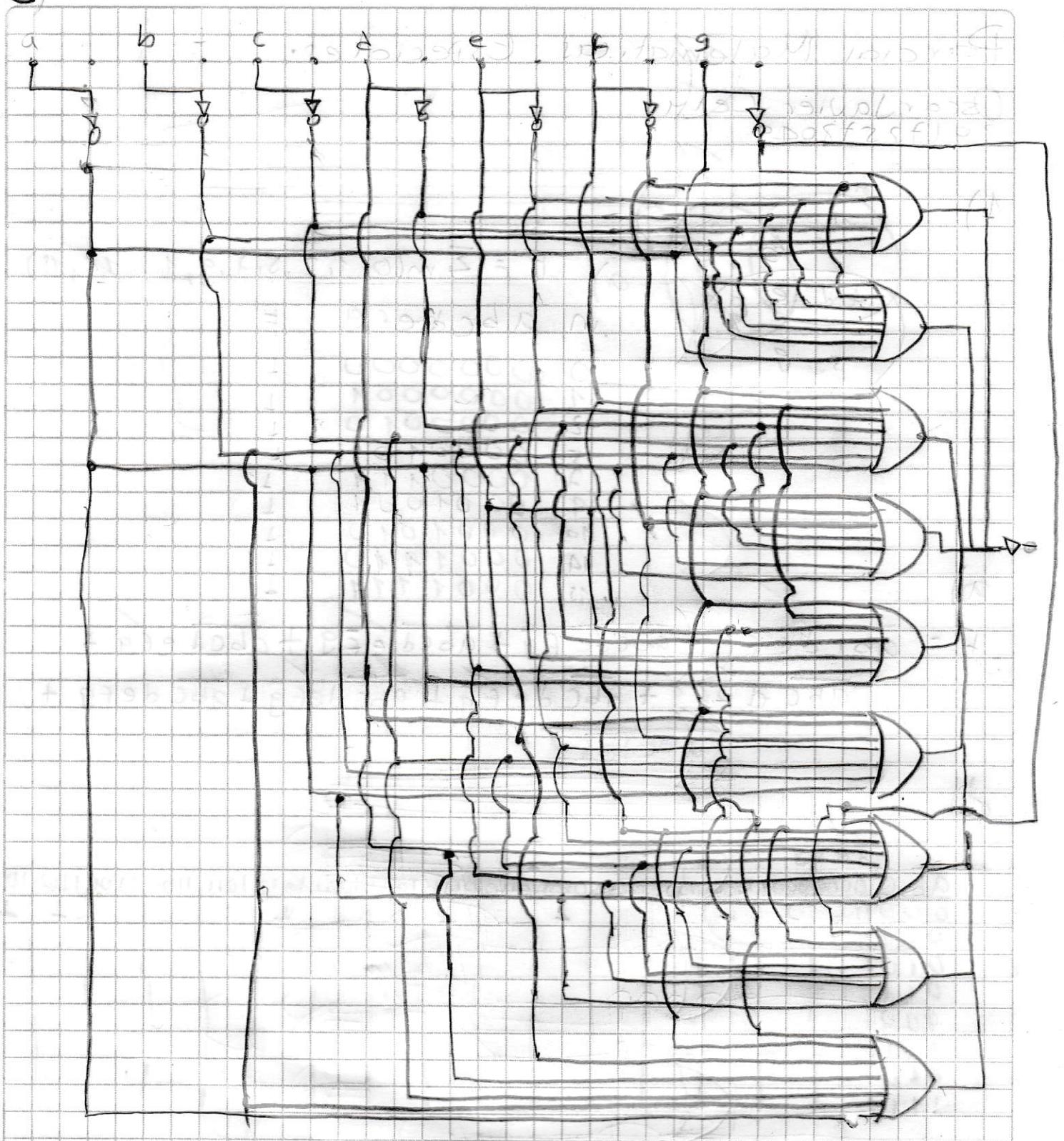
$$F = \overline{abcdefg} + \overline{abcdef}\bar{g} + \overline{abcd}\bar{e}\bar{f}g + \overline{abcd}efg + \overline{abc}d\bar{e}fg + \overline{abc}d\bar{e}f\bar{g} + \overline{abc}def\bar{g} + \overline{abc}defg + \overline{abcdefg}$$

c)

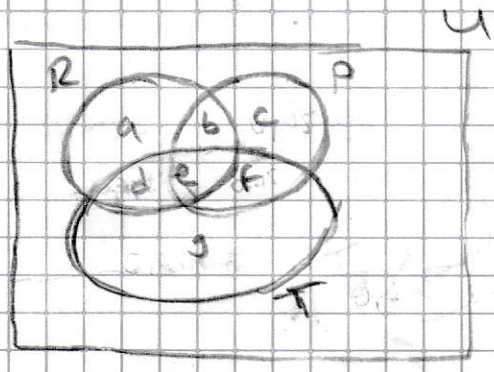


$$F = \overline{abcde} + \overline{abcd}\bar{e}fg + \overline{abc}de\bar{f}g + \overline{abc}d\bar{e} + \overline{abc}def$$

€


a
b
c
d
e
f
g

2)



$U = 1.000.000$

$d = T \cap R = 0,2\,(0,7U) = 140.000$

$e = T \cap P = 0,45\,(0,7U) = 315.000$

$g = 0,7U - T \cap P - T \cap R$

$= 700.000 - 315.000 - 140.000$

$T = 245.000$

a) 140.000 Ven TV

Ninguno de ellos lee Periodicos

$R = 0,4U - R \cap T$

$= 400.000 - 140.000$

$= 260.000$

b) 185.000 habitantes

$P = 0,5U - T \cap P$

$= 500.000 - 315.000$

$= 185.000$

3)

$R_1 = \{(a,a), (b,a), (d,d), (a,b), (b,d), (c,a)\}$

$R_2 = \{(a,b), (b,a), (c,d), (c,b), (b,d), (c,c)\}$

a) Matrices

M_{R_1}

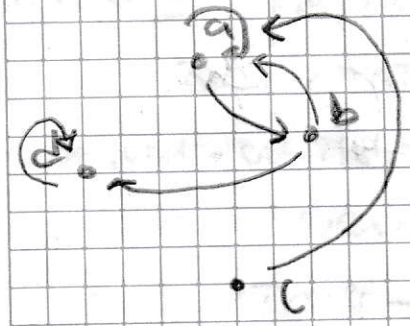
	a	b	c	d
a	1	1	1	0
b	1	0	0	0
c	0	0	0	0
d	0	1	0	1

M_{R_2}

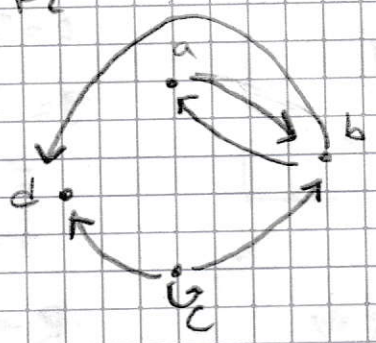
	a	b	c	d
a	0	1	0	0
b	1	0	1	0
c	0	0	1	0
d	0	1	1	0

b) Digrafo

R_1



R_2



c) $R_3 = R_1 \oplus R_2$

	a	b	c	d
a	1	1	1	0
b	1	0	1	0
c	0	0	1	0
d	0	1	1	1

$R_4 = R_1 \circ R_2$

	a	b	c	d
a	1	1	1	0
b	1	0	0	0
c	0	0	0	0
d	0	1	0	1

$\circ$

	a	b	c	d
a	0	1	0	0
b	1	0	1	0
c	0	0	1	0
d	0	1	1	0

$=$

	a	b	c	d
a	1	1	1	0
b	0	1	0	0
c	0	0	0	0
d	1	1	1	0

$R_5 = R_1 \cap R_2$

	a	b	c	d
a	0	1	0	0
b	1	0	0	0
c	0	0	0	0
d	0	1	0	0

d) Ninguna es de orden Parque ninguna es reflexiva

Ninguna tiene la diagonal principal con solo 1s

5)

$325E_{(16)}$, $42C3_{(16)}$

a)

$325E_{(16)} \rightarrow$

3	2	5	E	(16)
0011	0010	0101	1110	(2)
0 1	1	1	6	(8)

$8192 + 4096 + 512 + 64 + 16 + 8 + 4 + 2 = 12894_{(10)}$

$42C3 \rightarrow$

4	2	C	3	
0100	0010	1100	0011	(2)
0 1	1	3	3	(8)

$16384 + 512 + 128 + 64 + 2 + 1 = 17091$

b) mcm

12894	2
6447	3
2149	7
307	307
1	

17091	3
5697	3
1899	3
633	3
211	211
1	

mcm = 220.372.354

MCD:

12894	17091	2
6447	17091	3
2149	5697	3
2149	1899	3
2149	633	3
2149	211	7
307	211	211
1	1	307

MCD = 3

c) Mensaje a Enviar → 0011

1	2	3	4	5	6	7
P_1	P_2	0	P_3	0	1	1
1	1	0	1	0	1	1

→ MSJ enviado

$P_1 = D_1 \oplus D_2 \oplus D_4$

$P_2 = D_1 \oplus D_3 \oplus D_4$

$P_3 = D_2 \oplus D_3 \oplus D_4$

c) MSJ a enviar → 0 0 1 1

Error bit 4 → 0 0 1 0

1	2	3	4	5	6	7	
P_1	P_2	D_1	P_3	D_2	D_3	D_4	
1	1	0	1	0	1	1	→ MSJ enviado
0	1	0	1	0	1	0	→ MSJ recibido
X	✓		✓				

1 0 0 = D4