Nama : Raka Putra Pramudityo
NPM : 202243500353
Kelas : Y3C / Ekstensi
Tugas : Tugas Besar Matematika Diskrit

1.)

w	x	y	z
0	0	0	0
0	0	0	1
0	0	1	0
0	0	1	0
0	1	0	0
0	1	0	1
0	1	1	1
0	1	1	0
1	0	0	1
1	0	0	1
1	0	1	1
1	0	1	1
1	1	0	0
1	1	0	1
1	1	1	1
1	1	1	0

Tentukanlah
a. Bentuk kanonik SOP
b. Sederhanakanlah dg k-map.

Jawaban

①(a.)

w	x	y	z	(w,x,y)		
0	0	0	0	$\to M_0$	$\to$	POS
0	0	0	1	$\to m_1$	$\to$	SOP
0	0	1	0	$\to M_2$	$\to$	POS
0	0	1	0	$\to M_3$	$\to$	POS
0	1	0	0	$\to M_4$	$\to$	POS
0	1	0	1	$\to m_5$		SOP
0	1	1	1	$\to m_6$		SOP
0	1	1	0	$\to M_7$	$\to$	POS
1	0	0	1	$\to m_8$		SOP
1	0	0	1	$\to m_9$		SOP
1	0	1	1	$\to m_{10}$		SOP
1	0	1	1	$\to m_{11}$		SOP
1	1	0	0	$\to M_{12}$	$\to$	POS
1	1	0	1	$\to m_{13}$		SOP
1	1	1	1	$\to M_{14}$		SOP
1	1	1	0	$\to M_{15}$	$\to$	POS

$F(w,x,y) =$
SOP $\to = m_1 + m_5 + m_6 + m_8 + m_9 + m_{10}$
$+ m_{11} + m_{13} + m_{14}$

$F(w,x,y) = (w'x'y' + w'xy' + w'xy + wx'y'$
$+ wx'y + wx'y' + wxy' + wxy$

(b.)

wx \ yz	00	01	11	10
00	M_0	m_1		M_2
01	M_4	m_5	m_6	M_7
11	M_{12}	m_{10}	M_{14}	M_{15}
10		m_8	m_{11}	

$$P_1 = 0 \ (w,x,y) = w'x'y' + w'xy'$$
$$f(w,x,y) = w'y'(x'+x) = w'y'$$

$$P_2 = 1 \quad f(w,x,y) = w'xy + wx'y'$$
$$f(w,x,y) = (w_1 + w)(x+x)(y+y')$$
$$P_3 = 1 \quad (wxy) = wx'y + wx'y$$
$$f(wxy) = 1 \quad wx'$$
$$P_4 = 0 \quad f(w,x,y) = 1 \quad wxy' + wxy$$
$$= \underline{\underline{(y'+y)}}$$

2)

wx \ yz	00	01	11	10
00	1	0	0	1
01	0	1	1	0
11	0	1	1	0
10	1	0	0	1

Tentukanlah

A. Bentuk kanonik SOP

B. Sederhanakanlah dengan k-map

C. Buat Tabel kebenaran

yz

	00	01	11	10
wx 00	1	0	0	1	→ P₂
01	0	1	1	0
11	1	1	1	0
10	1	0	0	1

↓
P₁

kmap: P₁ ⇒ $w'xy'z$) $y'xz$)
$w'xyz$)

$wxy'z$) wxz) xz)
$wxyz$) z

P₂ ⇒ $w'x'y$) $w'x'$)
$w'x'y$) $w'x'$) x')
$wx'y$) wx') x')
$wx'y$)

$E(w,x,y,z) =$ ~~xz x'~~ z
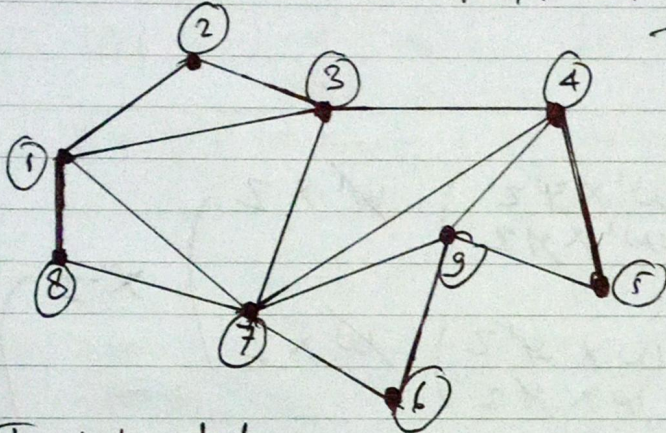
3)

b ———————————— c

a — g — d

f — e
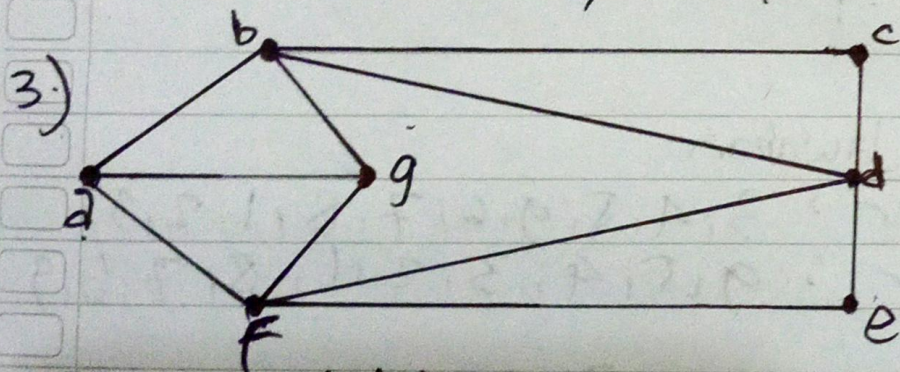
Tentukanlah!

a. lintasan dan Sirkuit Euler.

b. lintasan dan Sirkuit Hamilton

(a.) Lintasan euler : b, c, d, e, f, d, b, a, f, g, b, a, g.
Sirkuit euler : a, g, f, e, d, c, b, d, f, a.

(b.) Lintasan Hamilton : b, c, d, e, f, g, a, b
Sirkuit Hamilton : b, g, a, f, e, d, c, b.

Tentukanlah
a. lintasan ~~dan~~ dan sirkuit euler
b. lintasan dan sirkuit hamilton

(a.) ~~Lintasan euler~~ : ~~9, 5, 4, 3, 2, 1, 8, 7, 6, 9.~~
~~Sirkuit euler~~ :

Jawaban

(a.) Lintasan euler : 3, 4, 5, 9, 6, 7, 8, 1, 2, 3.
Sirkuit euler : 9, 5, 4, 3, 2, 1, 8, 7, 6, 9

(b.) Lintasan Hamilton : 9, 5, 4, 7, 3, 2, 1, 8, 7, 6, 9
Sirkuit Hamilton : 9, 5, 4, 3, 2, 1, 8, 7, 6, 9