Kasus Aljabar Boolean

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SOP/POS

Representasikan ke dalam Fungsi Boolean SOP dan POS !

1.

x	y	z	f(x,y,z)
0	0	0	0
0	0	1	**1**
0	1	0	0
0	1	1	0
1	0	0	**1**
1	0	1	0
1	1	0	0
1	1	1	**1**

2.

x	y	z	f(x,y,z)
0	0	0	0
0	0	1	0
0	1	0	**1**
0	1	1	**1**
1	0	0	0
1	0	1	0
1	1	0	**1**
1	1	1	**1**

Standar/Kanonik

Nyatakan dalam bentuk Standar/Kanonik secara
   underline aljabar

3. $f(x,y,z) = x'y'z + xz + yz$
4. $f(x,y,z) = x + y'z$
5. $f(x,y,z) = x + z$
6. $f(x,y,z) = z'$
7. $f(w,x,y,z) = wxy + yz + xy$

POS

Nyatakan dalam POS secara <u>aljabar</u>:

8. $f(x,y,z) = x\,y + x'z$

9. $f(x,y,z) = x'y'z + xz + yz$

Penyederhanaan secara <u>Aljabar</u>

Sederhanakanlah fungsi Boolean

10. $f(x,y) = x'y + xy' + xy$

11. $f(x,y,z) = x'y'z' + x'y'z + x'yz + x'yz' + xy'z' + xyz'$

12. $f(x,y,z) = xy + xy'z + y(x'+z) + y'z'$

13. $f(w,x,y,z) = wx + xy + yz + zw + w'x'yz' + w'x'y'z$

14. $f(w,x,y,z) = (w + x + y)' + x'y(z' + w'z) + (w'x')'$

15. $f(v,w,x,y,z) = vw(x+y+xz') + v'x'z(wy'+x'(z'+v'y))$

Penyederhanaan dengan K' MAP

16

vw \ xy	00	01	11	10
00	1	1		
01			1	1
11		1		
10		1		

17

vw \ xy	00	01	11	10
00	1			
01	1		1	1
11	1		1	1
10	1			

18

vw \ xy	00	01	11	10
00	1	1	1	1
01				
11	1	1		
10	1	1		

19

vw \ xy	00	01	11	10
00	1			
01	1	1		
11		1		
10				

20

vw \ xy	00	01	11	10
00	1	1		
01	1	1		
11		1	1	
10		1	1	

21

vw \ xy	00	01	11	10
00	1			
01	1	1		
11	1	1		
10	1			

Penyederhanaan dengan K' MAP

22

vw \ xy	00	01	11	10
00		1	1	
01	1	1	1	1
11	1	1	1	1
10		1	1	

23

vw \ xy	00	01	11	10
00		1		
01	1			1
11				
10		1		

24

vw \ xy	00	01	11	10
00		1	1	
01	1			1
11	1			1
10		1	1	

25

A	B	C	Y
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

Penyederhanaan dengan K' MAP

26. $f(a,b,c,d) = \Sigma m(0,1,2,4,5,6,8,9,12,13,14)$

27. $f(a,b,c,d) = \Pi M(3,4,6,7,11,12,13,14,15)$

28. $f(a,b,c) = a'b'c' + ab'c' + ab'c + abc$

29. $f(a,b,c,d) = ab + ad + ab'd' + a'bd + a'b'c'd' + a'b'cd'$

30. $f(a,b,c,d) = (a + bc)(bd + (ac)') + (b'c+ad)(a+b)'$

Penyederhanaan dengan <u>K' MAP</u>

31. $f(a,b,c,d) = (ab' + ac')'$

32. $f(a,b,c,d) = (a'b + (cd)' + ac' + acd)'$

33. $f(w,x,y,z) = y'z + wxy' + wxz' + w'x'z$

34. $f(a,b,c,d) = (a'b'c + a'bc + ab')'$

35. $f(w,x,y,z) = x'yz' + (x(w \oplus z))'$

Penyederhanaan dengan K' MAP

37. f(a,b,c) = ?

A \ B	0	1
0	0	C'
1	0	C'

38. f(a,b,c) = ?

A \ B	0	1
0	1	C'
1	0	C'

39. f(a,b,c) = ?

A \ B	0	1
0	1	C'
1	C	C'

40. f(a,b,c) = ?

A \ B	0	1
0	C	C'
1	C	C'

Penyederhanaan dengan K' MAP

41. f(a,b,c) = ?

A \ B	0	1
0	C'	C'
1	C	C'

42. f(a.b.c) = ?

A \ B	0	1
0	C'	1
1	1	C

43. f(a,b,c) = ?

A \ B	0	1
0	C	C
1	1	C

Penyederhanaan dengan K' MAP

44. f(w,x,y,z) = ?

w \ xy	00	01	11	10
0	Z	1	1	Z
1	Z	1	1	Z

45. f(w,x,y,z) = ?

w \ xy	00	01	11	10
0	Z	Z'	1	Z
1	Z	Z'	1	Z

46. f(w,x,y,z) = ?

w \ xy	00	01	11	10
0	Z	1	0	Z
1	Z	1	1	Z

47. f(w,x,y,z) = ?

w \ xy	00	01	11	10
0	Z'	1	Z'	1
1	1	Z'	Z'	Z'

Penyederhanaan dengan K' MAP

48. f(v,w,x,y,z) = ?

vw \ xy	00	01	11	10
00	0	0	0	0
01	0	Z'	Z'	0
11	0	Z	Z	0
10	0	0	0	0

49. f(v,w,x,y,z) = ?

vw \ xy	00	01	11	10
00	0	0	0	0
01	0	Z'	Z'	0
11	0	1	1	0
10	0	Z	Z	0

50. f(v,w,x,y,z) = ?

vw \ xy	00	01	11	10
00	Z'	Z	Z	1
01	1	Z	Z	1
11	1	1	Z	1
10	Z'	Z	Z	1

51. f(v,w,x,y,z) = ?

vw \ xy	00	01	11	10
00	Z'	1	Z	0
01	0	1	0	1
11	0	1	0	1
10	0	1	1	0

Penyederhanaan dengan K' MAP

52. f(w,x,y,z) = ∑m(0, 2, 3, 4, 5, 6, 8, 9, 10, 12, 14)

w/xy	00	01	11	10
0				
1				

53. f(a,b,c,d,e)=∑m(3,4,5,7,8,9,11,12,18,19,20,21,22,24,25,27)

ab/cd	00	01	11	10
00				
01				
11				
10				

Penyederhanaan dengan K' MAP

54.

v/wx	00	01	11	10
0	y' + z	1	z	z
1	y'z'	z' + y	y	yz'

F(v,w,x,y,z) = ?

55.

v\wx	00	01	11	10
0	z' + y'	z	yz	z'
1	z'	0	0	0

F(v,w,x,y,z) = ?

Penyederhanaan dengan K' MAP

56.

A	B	C	Y
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	0

57.

A	B	C	Y
0	0	0	Φ
0	0	1	1
0	1	0	0
0	1	1	Φ
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	Φ

Penyederhanaan dengan K' MAP

58.

A	B	C	D	Y
0	0	0	0	0
0	0	0	1	1
0	0	1	0	0
0	0	1	1	1
0	1	0	0	0
0	1	0	1	1
0	1	1	0	0
0	1	1	1	1
1	0	0	0	0
1	0	0	1	1
1	0	1	0	Φ
1	0	1	1	Φ
1	1	0	0	Φ
1	1	0	1	Φ
1	1	1	0	Φ
1	1	1	1	Φ

Penyederhanaan dengan K' MAP

59. $f(a,b,c) = \sum m(0,2,5,7) + \Phi(1,3,4,6)$

60. $f(a,b,c,d) = \sum m(1,3,7,11,15) + \Phi(0,2,5)$

61. $f(a,b,c,d) = \Pi M(0,3,4,7,13) \cdot \Phi(1,2,5,6,9)$

62. $f(a,b,c,d) = \sum m(1,2,4,6,8,10,13) + \Phi(0,3,9,15)$

63. $f(a,b,c,d) = \sum m(0,2,5,6,9,12,14) + \Phi(3,4,10,15)$

64. $f(a,b,c,d) = \sum m(3,4,7,9,10,11,13,15) + \Phi(0,1,2,6,8)$

65. $f(a,b,c,d) = \Pi M(0,1,3,4,6,7,8,9) \cdot \Phi(2,5,10,15)$

66. $f(a,b,c,d) = \Pi M(0,2,4,5,9,11,15) \cdot \Phi(1,7,8,12,13)$

67. $f(a,b,c,d) = \Pi M(1,3,5,6,8,10,12,15) \cdot \Phi(0,4,9,11)$