

PRESENTATION

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INTERN

SOP is a method of describing a Boolean expression using a set of minterms or product terms.

POS is a method of describing a Boolean expression using a set of max terms or sum terms.

Hence, these definitions themselves contain the main difference between SOP and POS.

Question

For the Boolean expression
 $f = a'b'c' + a'bc' + ab'c' + abc + abc'$
the minimized Product of Sum (PoS)
expression is

- a) $f = (b + c')(a + c')$
- b) $f = (b' + c)(a' + c)$
- c) $f = (b' + c)(a + c')$
- d) $f = c' + abc$

K-Map for SOP

	<u>b'c'</u>	<u>b'c</u>	<u>bc</u>	<u>bc'</u>
a'	1	0	0	1
a	1	0	1	1

After mapping

	<u>b'c'</u>	<u>b'c</u>	<u>bc</u>	<u>bc'</u>
a'	1	0	0	1
a	1	0	1	1

Reduced SOP expression is

$$f=c'+ab$$

Hence the POS form is

$$z=(a'+c)(b'+c)$$

Arduino Code

```
int a,b,c;  
int A,B,C,D,f;  
void setup(){
```

```
  pinMode(9,INPUT);  
  pinMode(8,INPUT);  
  pinMode(7,INPUT);  
  pinMode(2,OUTPUT);  
  pinMode(3,OUTPUT);  
  pinMode(4,OUTPUT);  
  pinMode(5,OUTPUT);  
  pinMode(6,OUTPUT);  
}
```

```
void loop(){  
  a=digitalRead(9);  
  b=digitalRead(8);
```

```
  c=digitalRead(7);  
  f=(!a&&!b&&!c)||(!a!c)||(a&&!b  
    &&!c)||(a&&b&&c)||(a&&b&&!c);  
  A=(b||!c)&&(a||!c);  
  B=(!b||c)&&(!a||c);  
  C=(!b||c)&&(a||!c);  
  D=!c||(a&&b&&c);  
  digitalWrite(2,f);  
  digitalWrite(3,A);  
  digitalWrite(4,B);  
  digitalWrite(5,C);  
  digitalWrite(6,D);  
}
```