Chapter 8.2: Syntactic Logic Coverage Criteria (DNF)

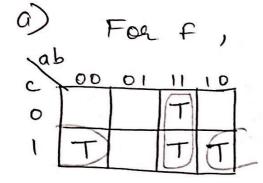
Complete the problems below and submit this word document with your answers.

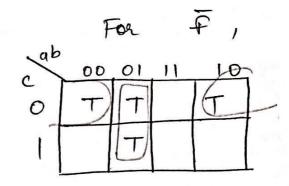
What to do?	Extra Credit:
Use two predicates below and answer the following questions for each of them.	This is optional. You will receive up to 20 points for this part. Use the predicate below and answer the following questions for this predicate.
1) $f = ab + a\bar{b}c + \bar{a}\bar{b}c$ 2) $f = \bar{a}\bar{c}\bar{d} + \bar{c}d + bcd$	$3) \ f = ab + \bar{a}c + a\bar{c}$

- a) Draw Karnaugh maps for f and \bar{f}
- b) Find the DNF non-redundant prime implicant representation for f and $ar{f}$
- c) Give a test set that satisfies Implicant Coverage (IC) for f
- d) Give a test set that satisfies Multiple Unique True Point (MUTP) for f
- e) Give a test set that satisfies Corresponding Unique True Point and Near False Point Pair Coverage (CUTPNFP) for f
- f) Give a test set that satisfies Multiple Near False Points (MNFP) for f
- g) Give a test set that is guaranteed to detect all DNF faults (i.e., MUMCUT)

Homework 6

Devaush Amin





b) For
$$f$$
, $f = ab + \overline{b}c$

For \overline{f} , $\overline{ab + \overline{b}c}$

	a	1 b	C	
ab	T	T		
Бс		F	T	
āb	F	T	,	_
<u> </u>		F	F	_

Final minimized
Test set:

{TT-,-FT,
FT-,-FF}

d) MUTP Test set: 1 TTF, TTT, FFT, TFT3 e) CUTPNFP For implicant ab, NFP UTP FTF TTF b TTF TFF For implicant be, UTP NFP 5 FFT FTT C FFT FFF Possible CUTPNFP test sets 2 TTF, FFTY OTPS LFTF, TFF, FTT, FFF3 → NFPS MNFP t) For implicant ab, NAS a > FTF, FTT · b -> TFF, TFPT For implicant bc, $. \ \vec{b} \rightarrow FTT, TTT$ NFPS oc → FFF, TFF Test set 1 FTT, FFF, TTT, TFF, FTF , TFT 3

9) MUMCUT

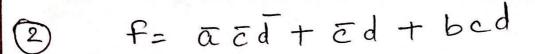
MUTP -> { TTF, TTT, FFT, TFT3

UUTPNFP→ LTTF, FFTJ→UTPS ZFTF, TFF, FTT, FFFJ→NFPS

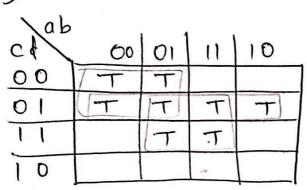
MNFP → {FTT, FFF, TTT, TFF, FTF, TFT}

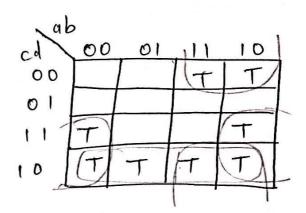
MUMCUT TEST Set

2 TTF, TTT, FFT, TFT, FTF, TFF, FTTT, FFF)









b) For
$$f$$
,
$$f = \bar{a}\bar{c} + \bar{c}d + bd$$
For \bar{f} ,
$$\bar{f} = a\bar{d} + \bar{b}c + c\bar{d}$$

	a	16	C	1 d
āc	F		F	
ē d			F	T
bd		T		T
a d	T			F
БС		F	T	
1			T	F
cd				

Final minimized
Test Set:

{ FTFT, TFTF}

d) MUTP

Test set

1 FTFF, FFFT, TFFT, FTFT, TTFT,

FTTTY

e) CUTPNFP

For implicant a c, UTP NFP THEA A FIFF TIFF C FFFF FFFF FTFF

For implicant cd,

UTP NFP

C TFFT TFTT

d TFFT TFFF

For implicant 6d,

UTP NFP

B FTTT FFTT

d TTTT

Possible CUTPNFP test set

LETFF, TFFT, FTTT, TTTTY OTPS

LTTOFF, FTTF, TFTT, TFFF, FFTT,

TTTF Y -> NFPS

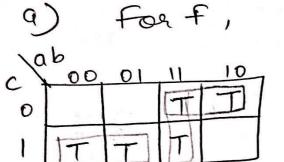
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MNFP
    For implicant ā c
              a \rightarrow TTFF, TFFT
       NFPS
               · c > FTTF, FFTT
   For implicant Ed
             · c > TFTT, FTTT
       NFPS
             · d → TFFF, FTFF
  For implicant bd
       NFPS . b > TFFT, FFTT
              · d > TTFF, FTTF
  Test set
    1 TTFF, TFFT, FTTF, FFTT, TFTT,
         FTTT, TFFF, FTFF7
     MUMCUT
MUTP Test Set LFTFF, FFFT, TFFT,
             FTFT, TTFT, FTTTY
CUTPNFP Test Set
        1 FTFF, TFFT, FTTT, TTTTJ > UTPS
       TTFF, FTTF, TFTT, TFFF, FFTT,
```

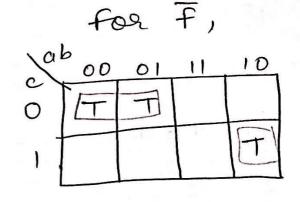
TTTF 9 - NFPS

MNFP Test Set &TTFF, TFFT, FTTF, FFTT, TFTT, TFTT, FTTF, FTTF, FTTF, MUMCUT Test Set

{ FTFF, FFFT, TFFT, FTFT, TTFT, TTFT, TTFF, TTTT, TFFF, FTTT, TFTT, TFFF,

Extra eredit.





b)
$$f = \bar{a}c + ab + a\bar{c}$$

 $\bar{f} = \bar{a}\bar{c} + a\bar{b}c$

```
D MUTP
 Test set of TFF, TTF, TTT, FFT, FTT'S
 For, ac,
 - TFF, TTF
 For ab,
 - TTT, TTF
 For ac,
 ー FFT, FTT
e) CUTPNFP
  For implicant ac,
         a TFF FFF V
         C TFF TFT V
        implicant ab,
  For
                          Not possible.
           TTT TFT X
        implicant āc,
   For
            FFT TTT X Y NOT POSSIBLE.

FTT FTF V
 Possible CUTPNFP test set
       LTFF, FTT y - UTPS
       of FFF, TFT, FTF y -> NFPS
```

```
F) MNFP
 For implicant ac,
    NFPS
            · a -> FFF, FTF
            · c → TFT, TTT
  For implicant ab,
    NFPS
            · a -> FTT , FTF
            · b > TFT, TFF
   For implicant ac,
             o \overline{a} \rightarrow TFT, TTT
     NFPS
             · C -> FTF, FFF
  Test set
    2 TFT, FTF, TTT, FFF, FTT, TFF3
 3) MUMCUT
Test set
 1 TFF, TTF, TTT, FFT, FTT, FFF, TFT,
     FTF }
```