(} 10, b) E 20m (I A] = I (O LLA) (

Exercise 2

$$B = (n \wedge q) \vee (\neg n \wedge n) = B_1 \vee B_2$$

		1		un el u	ALY Y B - HX		
~	77	9	\sim	B= n19	B2=7111	B=B1VB2	x=1/9/~
7	F	T	T	TI	I F	Ť	T
OT.	F	T	F	为个工	4 F2 7(d)		Т
T	F	F	T	F	F	F	T
Т	F	F	FZ	- F 10	ab B go .	Markey &	BAT C
F.	Т	T	T	F	T		To
F	T	T	F	F	F	F	T
F	· T	F	Т	F	T	(T)	= r ³ T
F	T	F	F	F	F	TENE	= sp
-	1 1	1					

s = 1 (gid) ; (eif) ; (gig) } }

Every model of B is also model of X 3) X is a logical consequence of B

Exercise 3

ABTABLIA

ABTA

$$\Delta^{I} = (\Delta^{T}, \cdot I)$$

$$\Delta^{I} = dd_{1}e_{1}f_{1}g_{1}$$

$$\cdot^{I} = dd_{1}e_{1}f_{1}g_{1}$$

$$\cdot^{I} = dd_{1}e_{1}f_{1}g_{1}$$

$$\Lambda^{I} = (d_{1}e_{1})(e_{1}g_{1})$$

2)
$$(A \sqcup B)^{T} = \{A^{T} \cup B^{T} = \{d, e, f\}\}$$
 $(TA)^{T} = \Delta^{T} \setminus A^{T} = \{g\}$
 $(TA) \cdot (A \sqcap B)$
 $(A \sqcap B)^{T} = \{f\}$
 $(A \sqcap A)^{T} = \Delta^{T} \setminus (A \sqcap A)^{T} = \Delta^{T} = \{d, e, f, g\}$
3) Find 3 concepts of c that $C^{T} = S$
a) $S = \{d \mid e\}$
 $C_{1} = \{A \sqcap A\}$
 $C_{2} = \{A \sqcap A\}$
 $C_{3} = \{A \sqcap A\}$
 $C_{4} = \{A \sqcap A\}$
 $C_{5} = \{A \sqcap A\}$
 $C_{6} = \{A \sqcap A\}$
 $C_{7} = \{A \sqcap A\}$
 $C_{8} = \{A \sqcap A\}$
 $C_{9} = \{A \sqcap A\}$
 $C_{1} = \{A \sqcap A\}$
 $C_{2} = \{A \sqcap A\}$
 $C_{3} = \{A \sqcap A\}$
 $C_{4} = \{A \sqcap A\}$
 $C_{5} = \{A \sqcap A\}$
 $C_{6} = \{A \sqcap A\}$
 $C_{7} = \{A \sqcap A\}$
 $C_{8} = \{A \sqcap A\}$
 $C_{8} = \{A \sqcap A\}$
 $C_{8} = \{A \sqcap A\}$
 $C_{9} = \{A \sqcap A\}$
 $C_{1} = \{A \sqcap A\}$
 $C_{1} = \{A \sqcap A\}$
 $C_{2} = \{A \sqcap A\}$
 $C_{3} = \{A \sqcap A\}$
 $C_{4} = \{A \sqcap A\}$
 $C_{5} = \{A \sqcap A\}$
 $C_{6} = \{A \sqcap A\}$
 $C_{7} = \{A \sqcap A\}$
 $C_{8} = \{A \sqcap A\}$
 C_{8

Exercise 4: 1) TBOR is Ø and C is (AUBUJR.B) M (7A M7BMYR7B) (ALBLIJR.B) M (7AM 7BM KR.7B) (ao) (7A 17B 17 + R. 7B)(a0) (ALIBLI FR. B) (ao.) (U-mle) BLI FR.B (ao) A (ao) B (a.) 7 A (a0) FR. B (a) (11-mle) TA(a₀)

Tombe 1B(a₀) 7A(ao) 7B(a0) FR 7B(ao) R(ao, a1) (J-rule) 45 4 R JA (Q.) B(as) 7 A(ao) 7B(Q0) soria frable 7B(as) (x-rule) OFLIAS JET XOOT Cis not satisfiable

> 85.27 LIA = 9 85.27 LIA = 9 18.8 E = 9

> > 3

TBOR is 6 and C is (JR. JS JR. A) M(YR.YS. YR7A) (JR. JS. JR. A)Π(YR. YS. YR. 7A)(a_o.) (XR. 4S. XR.7A)(a.) (JR. JE. JE. A)(a0) $R(\alpha_0, \alpha_1)$ (F-rule) Fr.X rule J S. JR. A (a,) The link means that we have S(a11a2) (F-rule) already had JR.A(az) rasing before R(a21a3) condadd X(ne) (J-rule) A(a3) (FR. FS. FR 7A)(a) (M-rule) > FS FR 7A (a) (+-rule). >> XR 47A (az) (X-rule). >> 7 A (az) (X-rule) Cis not satisfiable T= { D=ALITG; E = 7A 4 YS.7B G= 3 S.BY = 1 D = ALI +S.7B E = 7ALL + S. 7B (a.8E = D

```
C= JR.7B M FR.7A M FR.D
= 3R.7(7ALI 45.7B) MYR.7A MYR.(ALI 45.7B)
   = JR. (AN JS.B) M FR. 7A M FR. (A LI FS. 7B)
Assume ( = lao)
We need to check T' = TU {C(ac)]
            (A LI + S.7B)(ac)
          (7A Ll + S.7B)(a0)
              7 S. B (a)
       JR(ATT JS.B) (TFR. 7A TT FR. (ALL FS. 7B) (a.)
This exercise is very stronge, both TBOX and C are not
Consistent.
  For TBOX
                  J S.B (a.)
                   S(a_0, a_1)
                               ( F-rule)
                     B (a,)
                  7ALIFS.7B(ac) (N-rule)
   · Slac, a1)
                                     S(acias)
    B(ac)
                                     B(Q1)
   7 A(ac) (1-m
(A LIFS. 7B)(ac) (17-mb)
                                457 B (a.)
                   ( L - rule)
  S(a0,101)
              5 (20, 21)
   Blax)
               B(a)
                                  S (a01 a1.)
  7 Alac)
               7A(ac)
                                  B(a1)
                                7B (a1) (+-mk)
               ¥5.7B
   A (ac) [LI-rule]
               S(a0,101)
               Blas)
                Hac
                7 Blas
```

For C: JR (ATT FLB) MYR. 7AMYR. (ALL YS. 7B) (Qc) (OT.27 UA) 9 XR (A 4 X S. 7B) (a.) A) 9 5 5 FR. 7A (a) Yours To amuse A JR. (AMJS.B) ac stade of bean an K(aoraz) (A M J S.B) as (J-mle) (ab) (at .27 LIA) 9 R (ag al) (a.25 MA) 8 E J S. B (a₁) (T-rule) FR. 7A (ac) (N-rule) Rlaoias) aux-17 (ao) dA(a1) AT (10,00) 7 8.B(a1) 7 A (as) (X-rule)

```
Exercise 5
 1) 0 = (T Bon, A Bon)
    TBON = (A E B M Fr. C)
    ABox = lAla)
    9 is consistent
       \Delta^{I} = laibJ
         AI = Lay
         BI= laiby
         NI = 1
     We have
       (Yn.C) = haiby
     - (B T x N.C) = BIN (Yn.C) = laiby
        AIC (BU Fr.C)
 2) 0'=00 (n(a,b),7C(b))
    ABon = ( A(a), n(a,b), 7C(b) y
    Gos is not consistent.
    We have realb) an 70 (b)
      \Rightarrow a \notin (\forall n \cdot C)^{\perp}
      e) a € (B M EVANE)
    However a E A I
      => AI (B ∏ Fn. C)
      = A F B ∏ + n. C
```