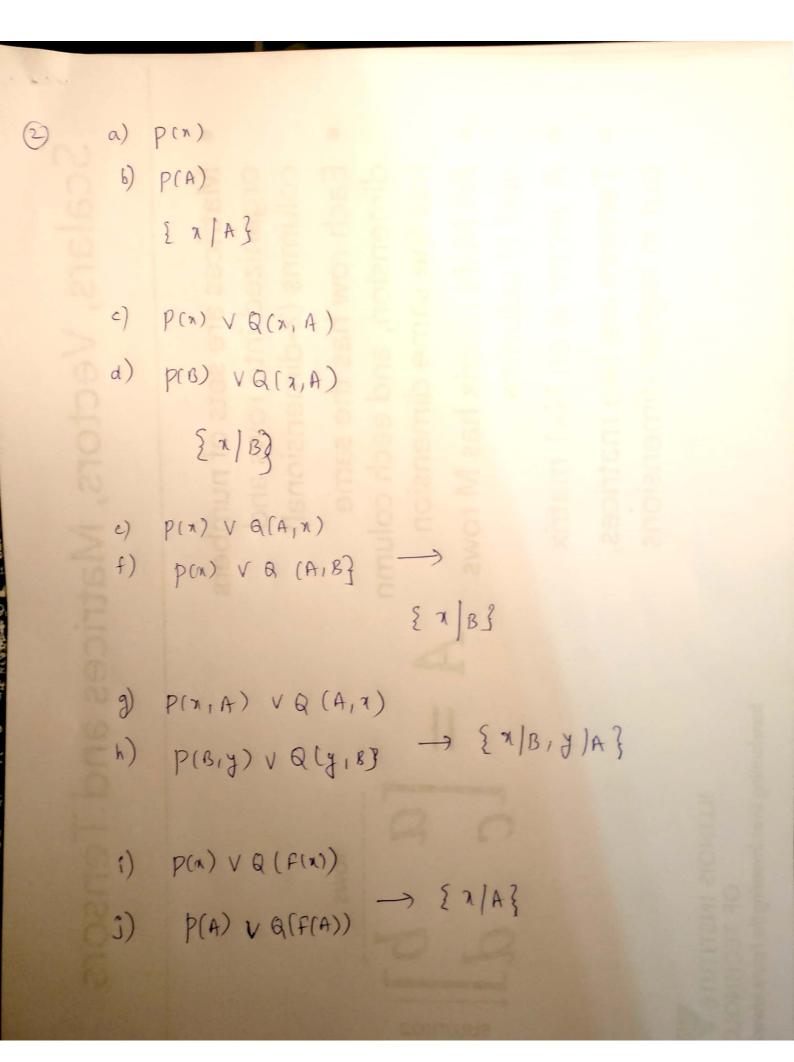
YP(n) -> Q[n) Drop implication Yn Tp(n) VQ(n) Drop universal quantifiers Tp(n) VQ(n) An ty p(n,y) =) Q(n) (Eliminate Implication) thy Tp(n,y) VQ(n) ( Drop universal quantifiers) TPCniy) VQ(n) Fr p(n) A Q(a) (A) (C) ( Skolemize) P(A) A Q(A) Fray pary) nQ(x,y) (d) Tray Peny) ARINY) IN PROFERED A Q(F(A), 2) (Drop & F) PLATFIAH A Q(FIAY, A) / (skotemiste) Jn P(n, A) A Q(n, A) (skolemise) P(B,A) NQ(B,A) (Skolimize)

(e) In ty p(n,y) => Q(n) ty P(Aix) (Skolemize) ·A is a Constant P(Acy) (Drop universal quantificrs) (f) An Jy p(n,y) Yn p(n, Fin) (skolemize) (Drop universal quantifiers) p(n, F(n)) Haty 73 p (m, y, 3) ( skolemize) Unity p(n, y, F(n,y)) (Drop universal quantifier) p(n, y, F(n, y)) 7x ty 42 p(n, y, 2) (skdemize) 4y 42 p(A, y, 3) (Drop universal quantifiers) p(A14,2)

∀n [∃y pony) nQ(y)] ⇒ R(n) ( Eliminate implication) to T( by pin,y) NQ(y)) VR(m) ( More 7 inwards) 47 [ty pony) v Tay) v Run) (Drop Universal quantifiers) Tp(ny) VTQ(y) VR(n) i) ta (ty p(yx) J) tm (ty p(n,y) = Qly)) => R(m) th [ty Tp(n,y) VQ(y)] =) R(n) ( -> ( Eliminate implication) Yn T[ty Tp(n,y) VQ(y)] VR(a) ( more 7 inwalds) th [ = y p(n,y) A=Q(y)] v R(n) (skolemise) Vn [P(n, F(n)) N TQ (F(n))] V Rin) ( Drop universal quantifiers) [P(n,F(n)) A TQ (F(n))] VR(n) [ Distribute A V over 1] [P(n,F(n)) V R(n)] N[7Q(F(n)) VR(n)]

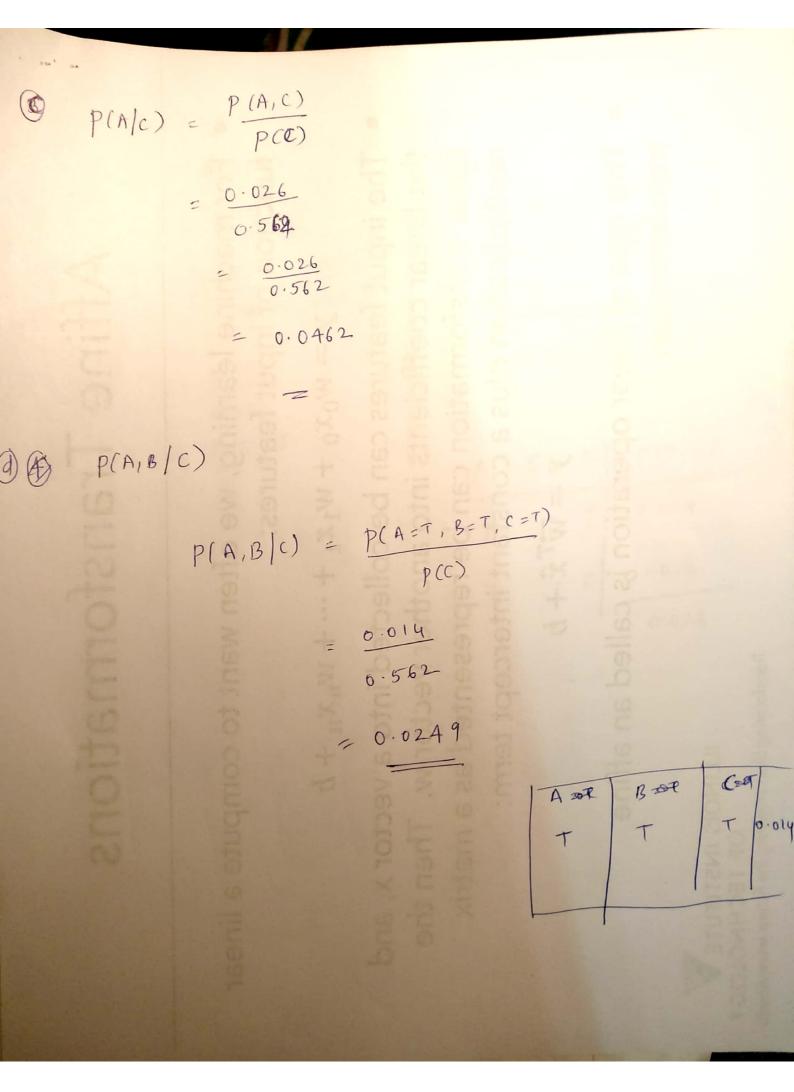


```
(c)
    P(n, A) V Q (F(n), n)
1)
    P(B, y) V R (F(B), B)
               Ex/B, 4/A}
    P(n,A) V Q (F(x), x)
  P(B,y) V Q (F(A),A)
                   Fai)
     PINIY) V Q(F(A), B)
                          > {7/F(A) / y) B}
 0)
     p(n,y) vQ(n,y)
 P)
      P(M) V Q(F(A), A)
                         -> {n/F(A), y/A}
      poniy) Va (niy)
 5) P(x 17) VQ (F(x) 17)
     P(2,4) VQ(3,4)
                    Fail
```

a) 
$$P(A, c) = p(A=T, c=T|B)$$
  
=  $p(A=T, c=T|B=T) + p(A=T, c=T|B=F)$   
=  $0.014 + 0.012$   
=  $0.014 + 0.012$   
=  $0.026$   
A B C  $p(A,B, T) = T = T = 0.014$ 

$$\widehat{b} \quad P(c) = \sum_{A \in B} P(A_1B_1C=T)$$

4	C	A	В	P(AB, C=P)
	7	て	T	0.014
0	T	F	T	0.392
531	T	T	F	0.012
	T	F	1 F	0-144
	100			



(e) P(B/A,C) P(B, A,C) P(A(C) = p(A3P, C=T/B2T)+ P(A,C) P(A=T,C=T|B=F)= P(B=T, A=T, C=T) P(A=T, C=T)= 0.014 + 0.012 0.026 = 0.014 0.026 = 0.0538 C B PlA, C) T T 0.014 0.026

(A) (a) i) P(X2) = 1 Independent parameter ii) P(Xn) = 1 Independent parameters (ii) P(X2, X3, --- Xn) = 2(n-1) independent parameters (V)  $P(X_2 / X_3 - - X_n)$  $= (2-1)(2^{n-2})$ = 21n-2) independent parameters ( p(x2-- Xn-1) 71n) c . 2 n-2 independent parameters.

(i) 
$$P(X_2) = 1$$
 Independent parameters  $P(X_2) = 1$  Independent parameters  $P(X_2) = 1$  Independent parameters  $P(X_2) = 1$   $P(X_2) =$