Port - B		13) P-> ~ 6	2, QYR,	vs >P, NR
Inference theory:		913	pana	rule P
2) CVD, (CVD)-	NH, NH > (ANNB)	423	QVR	nile P
ANNB >> RV	s => RVS	\$33	~R→R	rule T
{1} (cvD) →	NH rule P			[~p→& ⇒ PVQ
{2} ~H → (AΛ	NB) rule p	943 (1,3)	$P \rightarrow R$	The point $P \rightarrow Q$, $Q \rightarrow R \rightarrow P \rightarrow R$
133 (CVD) → (A	$N \sim B$) rule T $[P \rightarrow Q, Q \rightarrow R \Rightarrow P \rightarrow R]$	15}	NR	rule P
		463	NP	nuleT
$(A \land NB) \rightarrow R$	vs rule P			$[NQ, P \rightarrow Q \Rightarrow NP]$
453 (CVD) → (RVS) rule T $[P \rightarrow Q, Q \rightarrow R \Rightarrow P \rightarrow R]$	413	~S→P	rule p
		483	S	rule T
163 CVD	rule P			[NQ, PAQ => NP]
973 RVS	rule T [P, (P→Q) => Q]		Henre denv	$[NP, NS \rightarrow P \Rightarrow N/N$
Hence devi	ived.		overte deny	eu.

14) p > 1Q > 9	s), NRYP	and a	(-10)	NRVS		nelle T
=> R → 8			11 (5,10)			[P,Q => PVQ]
S soler				in Ash		11,00
	P-> (Q->s)	rule P	10	RJS		rele T
· Walle					Yes	[DEG = BY9N]
2.	(PAQ) -S	nie t				
Thate	0000	[P->(Q->R) => (PAQ)-1-	Hen	ce de	n'ved	
AND DE SEE	1/2020	mula 7	O MIN		200	
3	~ (PAR) VS	Tolo - Con	15) NPVQ, N	QVR,	K -> 2	=> P -> 8
		[P-10 = NPYQ]	14 0 11%		150	
Λ	~ (PAR)	malla T	£13	NPYR	44.3	rule P
7.	" (LVA)	IPYQ => P]	1 91111	nso	1 1 1 1	and T
5	3	[PVQ => Q) rule T	423	p→a	ſ	rele T Pra => ~PVQ]
6	NPVNB	rule T	d with		Constitution	Pole = Cria
		[NPAB) > NPV-B]	233	~QVR		rule P
					YUN VSLO	
7 9 200	NP	nilo T	943	Q -> R		rule T
		[PVQ >P]				P-JQ => NPVQJ
Tyler		Birth Ful	45}	$P \rightarrow R$	926	rule T
8	NRYP	rule P	(2,4)	1	[P	JQ, Q JR JPJR]
(20) to 20 94-050						
9	PUNR	r sule T	[6]	R->S	- Prove	rule P
	i i i i i i i i i i i i i i i i i i i	[PVQ => QVP]	\$T}	010		10 7
10 (7,9)	~R	110 7		P+S	T	rule T $P \Rightarrow Q, Q \rightarrow R \Rightarrow P \rightarrow R$
() (1,1)	~	nile T (~P,PVQ=>Q)	(5,63			ואס, מאר ארון
		(107,110)	J	dence o	lerved.	

	undirect met		Hence by the method.
P>q,	$q \rightarrow r$, $N($	par), pur sr	of contradiction, it is proved.
{1}	~~	Assumed - Premise	8) A: Est you send me an email message
123	p-> q	nule p	B: It will finish writing program
£33	q→r	rule P	c: 9 will go to sleep early
(4) (2,3)	p-> r	TP-SQ, Q->R=) PSR	$D: \mathcal{S}$ will wake up jeeling represhed i) $A \rightarrow B$
15}	~ (par)	rule P	ii) $NA \rightarrow C$ iii) $C \rightarrow D \Rightarrow NB \rightarrow D$
163	NPVNY	rule T [~(PNQ) => ~PV~Q	The state of the s
र्न	~p	[pva=)p]	123 C→D rule P
483	PYY	rule P	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
f9 } (7,83	7	Tape (pyo) - spi	[4] A→B rule P
10	YN~Y⇒ F	[NPA (PVQ) => Q] The mile T [P,Q => PAQ]	153 NB -> NA rule T [P+Q => NR -> NF

263	$NB \rightarrow D$	rule T	393 NPVNS rule T [P->R => NPVQJ
(5,3)		$[P \rightarrow Q, Q \rightarrow R \Rightarrow P \rightarrow R]$	N(DAC) rule T
			(PAS) [NPVNQ => N[PAQ]]
	Hence denve	d.	guil PAS rule P
19) P>Q	$, Q \rightarrow R, R \rightarrow s$, 8→~R	3123 $(PAS) \wedge \sim (PAS)$ rule T $PA \sim P \Rightarrow F$
=> (PA	()		False
		ac Illa Property	
{1}	P>Q	rule P	Hence proved
123	Q->R	rule P	20) A: Jack misses may classes
433 (1,2)	P->R	rule T	B: He fails high school
943	R->S	[psa, a > R = S P > R] rule P	c: He is uneducated
171	7		
453	R-3s	nuleT	D: Jack reads a lot of books.
(3,4)		[p->Q,Q->R=>P+R]	
2.1	C 3-16	aula P	$ \begin{array}{c} i) & A \rightarrow B \\ ii) & B \rightarrow C \end{array} $
463	SINR	rule P	(ii) $D \rightarrow \sim C$
173	PNNR	nule T	
41)		TP-1028-1 R > P-> R]	La Grand
§73	R→~S	[P→Q = ~Q → ~P]	
183 (3,7)	P->~S	[P→Q,Q→R ⇒ P→R]	La

113	A >B	rule P	21) (4 x) (p(x) - Q(x)), +x (1	R(x) -> ~Q(x
423	B→C	rule P	⇒ (:	$\forall x) (R(x) \rightarrow P(x))$	
33 (1,2)	A→c	TP-1R, Q-1R-3P-1R]	413	∀2 (R(x) → ~ Q(x))) rule P
443	DANC	rule P	423	Rly) - ~ Rly)	By US
953	$C \rightarrow \sim D$	nute T	43)	$\forall x (P(x) \rightarrow Q(x))$	nule f
(-)	- Anna	[P>0 => ~Q > ~P]	143	$P(y) \rightarrow Q(y)$	By US
363 3,5)	$A \rightarrow \sim D$	$[P \rightarrow Q, Q \rightarrow R \rightarrow P \rightarrow R]$	45}	$\sim a(y) \rightarrow \sim P(y)$	TP>Q =>~0>
173	~A V~D	rule T [PAR => ~PYG]	963 (2,53	$R(y) \rightarrow \sim P(y)$	P-)Q1Q+R=)P-
183	~(AND)	[NPVNR => N(PAQI)	173	$\forall x (R(x) \rightarrow \sim P(x))$	By UG1
(9)	AND	nle P		~ (***) * ***()) · · ·	
3103	(AND) NN (AN July false	(p) rule T [pn~p => F]			

	(P(a) → &(a)), Fyp	(y)	4103	$(P(a) \rightarrow R(a)) \land \sim (P(a) \rightarrow R(a))$) rule T [pn~p=) F]
=)	7z[Q(z)]			False	
{13	7z[Q(z)]	rule P		Hence derived	
423	~[fz[Q(z)]	Assumed premise.			
19110	Contract the second	(8)			
433	tz NQ(z)	Taking ~			
243	$\sim Q(a)$	By US			
र्डपु	Jy Ply)	Vale P			
463	P(a)	By ES			
373	P(a) *~ ala)	nile T P,Q => PYQ]			
					~
28}	$\sim (P(a) \rightarrow Q(a))$	Pr~q => ~(P>Q)			
		mile b			
993	$\forall \alpha (P(\alpha) \rightarrow Q(\alpha))$	By LYGT			
5103	$P(a) \rightarrow Q(a)$	By US			

100	AM [Pt	Sva(x)) -> Nxr	(N) V 9 M (M)
		ANT PLANOR ALAN)	owle P by vs
	§ 33y	P(4), Q(9)	ruleT PVA -> P, A.
	SAZ	4x (P(N))	by v&
	853	Ja (alm))	by EG.
	863	ke v((k)9)kh	(and) sulpt (exp). [Page Pag]

ga	In (p(n) ng(n)) =) I?	([p(x)]n Jx (q(x))
313	In (pin) nein)	rule P
3a3	P(y) A aly)	by us
ई उपे	Ply)	oulet, PAQ -> P
श्वो	q(y)	oulet, PAQ => Q.
र्ड्ड १	Ja[Pin]]	by EG
g, y	Jn [a(n)]	by EG
273	[cosp] re [cosp] re	nule T [P, a => pn a].

Show	that touemises are
` 1	student in this class knows how to
waite	a program in java" and "Everyone who
knows	how to write a program in java an
get a	high paying job! implies the conclusion
"someone	in this class can get a high
payment	jôb"
<u>Sol:</u>	A(x): x is in the class
	B(x): 2 Knows program in java
	c(x): x can get high payment Job

$ii)(\exists x) (A(x) \land B(x))$ $ii)(\forall x) (B(x) \rightarrow C(x))$ $\Rightarrow iii)(\exists x) (A(x) \land C(x))$				
(1)	(7x) (A(x) 1B(x))	nele P		
(2)	A(x) AB(x)	By ES.		
(3)	$(+x)$ $(B(x) \rightarrow c(x))$	rule P.		
(4)	$B(xy) \rightarrow C(xy)$	By US.		
15)	A(14)	nuleT[PAR => P]		
(6)	B(14)	nule T [PAQ => Q]		
(6,4) (4)	c (x)	nule T [P, P > a => &]		
(5,7) (8)	$A(y) \wedge C(y)$	nule $T(P, Q \Rightarrow PAQ)$		
(9)	Fx (A(x) A (x))	By EG1.		
(a) "Every living thing is a plant or animal" "John's gold fish is alive and \$\frac{1}{2}\$ not a plant" "All altanimals have hearts", [: John's gold fish has heart "] ⇒ conclusion \[\begin{align*} \text{SOI:} \text{\$\frac{1}{2}\$} \times \text{\$\text{a}\$} \text{ a living thing} \\ \text{\$P(x):} \times \text{\$\text{a}\$} \text{ a plant} \\ \text{\$A(x):} \times \text{\$\text{bas}\$} \text{ heart} \\ \text{\$\frac{1}{2}\$} \text{\$\text{\$\text{c}\$}} \text{\$\text{\$\text{a}\$} \text{\$\text{a}\$} \text{\$\text{bas}\$} \\ \text{\$\text{\$\text{\$\text{b}\$}} \$\text{\$				

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(1)
$$\forall x \left[1(r) \rightarrow P(r) \vee A(r) \right]$$
 rule P

(2) $1(y) \rightarrow P(y) \vee A(y)$ By US

(3) $1(J) \wedge \wedge P(J)$ rule P

(4) $1(J)$ rule T

 $P, \alpha \Rightarrow P \wedge \alpha J$

(5) $\wedge P(J)$ rule T

 $P, \rho \Rightarrow \alpha \Rightarrow \alpha f$

(6) $(4,2)$ P $[J] \vee A[J]$ P, $P \Rightarrow \alpha \Rightarrow \alpha f$

(7) $\wedge P[J] \rightarrow A[J]$ rule P

(8) $\forall x \left[A(x) \rightarrow H(x) \right]$ rule P

(9) $A[J] \rightarrow H[J]$ By US

(10) $[5, 9]$ A $[J]$ rule T

 $[P, P \Rightarrow \alpha \Rightarrow \alpha]$

(11) $(10, 9)$ H $[J]$ rule T

 $[P, P \Rightarrow \alpha \Rightarrow \alpha]$