6 (1a) Find the truth-tables for:

2 (i)
$$\left(p \lor (\neg q)\right) \rightarrow (\neg p)$$

p	q	¬р	$\neg q$	$p \lor (\neg q)$	$(p \lor (\neg q)) \to (\neg p)$
0	0	1	1		
0	1	1	0	0	
1	0	0	1	1	0
1	1	0	0		0

4 (ii)
$$\left(q \to p\right) \to \left(r \to p\right)$$

p	q	r	$q \rightarrow p$	$r \rightarrow p$	$(q \to p) \to (r \to p)$
0	0	0	- 1		The same of the sa
0	0	1		6	0
0	1	0	0	1	
0	1	1	0	0	1
1	0	0	1	1	11/
1	0	1	a Classic		1
1	1	0		1	
1	1	1		i	i

6 (1b) Find truth-tables for the following expressions:

$$2 \text{ (i)} \quad LS \coloneqq \left((p \to q) \to r \right),$$

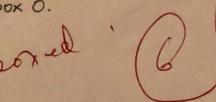
2 (ii)
$$RS := \left(q \rightarrow (r \rightarrow p)\right)$$
, and

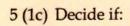
2 (iii) decide, if
$$\left((p \to q) \to r \right) \Rightarrow \left(q \to (r \to p) \right)$$

p	q	r	$p \rightarrow q$	$r \rightarrow p$	$(p \rightarrow q) \rightarrow r$	$q \to (r \to p)$	LS ⇒ RS
0	0	0	1		0		1
0	0	1	1	Ö			
0	1	0		1	0	1	
0	1	1		0		0	0
13	9		1			771200 12015	1, 10 10 10
1	0	0	0	186 1983	2011		
1	0	1	0			1 1000	1 /
							11. V.
1	1	0	1	1	0		X
1	1	1	1	1			/1

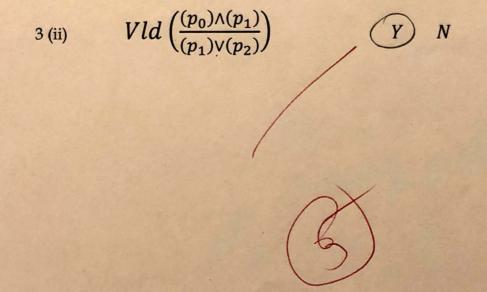
$$(p \to q) \to r$$
 \Rightarrow $(q \to (r \to p))$ Y N

Why? See the box O.





2 (i)
$$Vld\left(\frac{p_0}{(p_0)\vee(p_1)}\right)$$
 Y N



				Po→(PovP.)
(c.i)	Pol	Pi	POVP,	Po-700111
	0	0	0	e ains
	0	1		•
	1	0		0
	1	1	1	T .
	Tlg(Po-	> (P. v P.)))
	VId	((R)	V(P,)	

Po	P.	P2	(PO) N(P,)	(P.) V(P2)	((P)N(P))->((P.)V(P2))
00	00	0	0 0	0		
00	1	0	0	1	1	
1	00	0	0	1	1.	
1	1	0	(1		

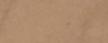
TIG $((P_0)\Lambda(P_1)) \rightarrow ((P_1)\vee(P_2))$ VId $((P_1)\wedge(P_2))$

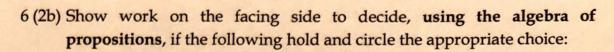
6 (2a) Find $\varphi(p,q,r)$ in terms of p,q,r, and connectives, if $\varphi(p,q,r)$ is to have the following truth table:

p	q	r	$\varphi(p,q,r)$	φ_1	φ_2	φ_3	φ4	φ_5	φ ₆	φ ₇	φ_8
0	0	0	1	0	0	0					
0	0	1	1	0	0	1	0			N. J. R	
					1250						
0	1	0	0	0	0	0	0				
0	1	1	0	0	0	0	0				
			TERMY!	106-13	W.	1					
1	0	0	1	0	1	D	0		1000	160%	
1	0	1	0	0	0	0	O		200 000	ALT.	C GOL
							-			2 -	
1	1	0	0	0	0	0	0				
1	1	1	1	-1	0	0	0				Y

 $\varphi(p,q,r)$

= (P 19 11) | V (P1 (7P) 1 (7r) | V ((7P) 1 (79) 1 (7r) | V (7P) 1 (79) 1 (7r)





1 (i)
$$\left((p \to p) \to q \right) = \mathsf{T}$$

Y (Circle the correct choice)

1 (ii)
$$\left((p \to q) \to q \right) = \mathsf{T}$$

Y (Circle the correct choice)

$$1 \text{ (iii) } \left((p \to q) \to p \right) = \mathsf{T}$$

(Circle the correct choice)

$$1 \text{ (iv) } \left(p \to (p \to q) \right) = \mathsf{T}$$

(Circle the correct choice)

$$1 (v) \left(p \to (q \to q) \right) = \mathsf{T}$$

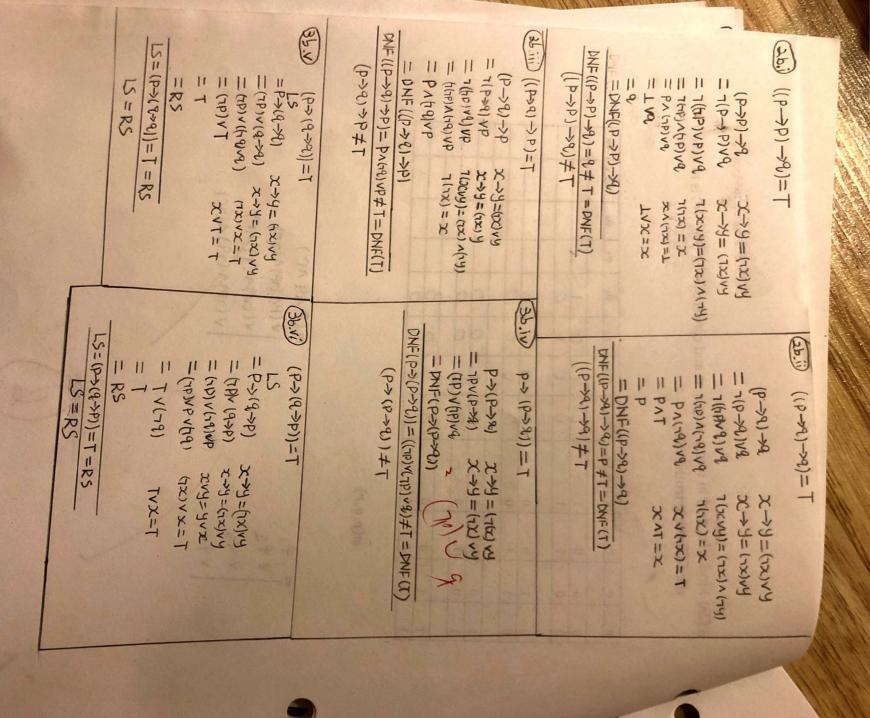
N (Circle the correct choice)

$$1 \text{ (vi) } \left(p \to (q \to p) \right) = \mathsf{T}$$



(Circle the correct choice)





6 (3a) Show work on the facing side to decide if the following proposition is a tautology, contradiction, or contingency, and circle an appropriate answer.

1 (i)
$$\left((p \to p) \to q \right)$$

$$Tlg(\psi)$$

$$Cdn(\psi)$$



1 (ii)
$$\left((p \to q) \to q \right)$$

$$Tlg(\psi)$$

$$Cdn(\psi)$$



$$1 \text{ (iii) } \left((p \to q) \to p \right)$$

$$Tlg(\psi)$$

$$Cdn(\psi)$$



$$1 \text{ (iv) } \left(p \to (p \to q) \right)$$

$$Tlg(\psi)$$

$$Cdn(\psi)$$

$$Cng(\psi)$$

1 (v)
$$\left(p \to (q \to q)\right)$$

$$Tlg(\psi)$$

$$Cng(\psi)$$

$$1 \text{ (vi) } \left(p \longrightarrow (q \longrightarrow p) \right)$$

$$Tlg(\psi)$$

$$Cdn(\psi)$$

