

Project 3 - Write your name on answer sheet					
1-3	Directions; Symbolize the following arguments with the letters indicated. Select your answer from the given choices A, B C, D.				
1	If he d rinks or uses dru g s he is de p endent. He uses drugs or is dependent. Therefore, he is dependent. (d, g, p)				
	a)	$d \vee (g \rightarrow p)$ $\underline{g \vee p}$ p	b)	$(d \wedge g) \rightarrow p$ $\underline{g \wedge p}$ p	
	c)	$d \vee (g \wedge p)$ $\underline{g \vee p}$ p	d)	$(d \vee g) \rightarrow p$ $\underline{g \vee p}$ p	
2	Either it is s olid but p orous or it is l iquid. It is not g aseous if it is liquid. It is not gaseous. Therefore, if it is not solid it is not gaseous. (s, p, l, g)				
	a)	$(s \vee p) \vee l$ $l \rightarrow \sim g$ $\underline{\sim g}$ $\sim s \rightarrow \sim g$	b)	$(s \wedge p) \vee l$ $\sim g \rightarrow l$ $\underline{\sim g}$ $\sim s \rightarrow \sim g$	
	c)	$(s \wedge p) \vee l$ $l \rightarrow \sim g$ $\underline{\sim g}$ $\sim s \rightarrow \sim g$	d)	$(s \vee p) \vee l$ $\sim g \rightarrow l$ $\underline{\sim g}$ $\sim g \rightarrow \sim s$	
3	If he contracts s mallpox, then he was not v accinated. Either he has m alaria or he has contracted smallpox and is in danger of d ying. He does not have malaria. Therefore, he was not vaccinated. (s, v, m, d)				
	a)	$s \rightarrow v$ $(m \vee s) \wedge d$ $\underline{\sim m}$ $\sim v$	b)	$s \rightarrow \sim v$ $(m \vee s) \wedge d$ $\underline{\sim m}$ $\sim v$	
	c)	$\sim v \rightarrow s$ $m \vee (s \wedge d)$ $\underline{\sim m}$ v	d)	$s \rightarrow \sim v$ $m \vee (s \wedge d)$ $\underline{\sim m}$ $\sim v$	
4	Which of the choices given in the table to the right of the argument below, should be used as the counter example chart for the argument:				
	$d \vee c$ $c \rightarrow b$ $\underline{\sim b}$ $\sim d$	Choices	b	c	d
		a)	T	T	F
		b)	T	F	F
		c)	F	T	T
		d)	F	T	F
		e)	F	F	T

5	Which of the choices given in the table to the right of the argument below, should be used as the counter example chart for the argument:					
	$\begin{array}{l} \sim a \rightarrow \sim b \\ \sim a \vee c \\ \hline \sim c \wedge d \\ b \end{array}$	Choices	a	b	c	d
		a)	F	F	F	T
		b)	T	F	T	T
		c)	F	T	T	F
		d)	F	T	F	F
		e)	F	F	T	T
6	Which of the choices given in the table to the right of the argument below, should be used as the counter example chart for the argument:					
	$\begin{array}{l} a \vee (b \wedge \sim c) \\ a \rightarrow \sim d \\ \hline \sim d \rightarrow \sim b \end{array}$	Choices	a	b	c	d
		a)	T	T	F	F
		b)	T	T	T	T
		c)	F	T	T	T
		d)	F	T	T	F
		e)	F	F	F	F

7-9			Directions: Use truth tables to determine if the arguments are valid or invalid. Write on the answer sheet next to the example number, your answer as to whether the argument is a) VALID or b) INVALID.		
7)	8)	9)			
$\begin{array}{l} \sim (b \rightarrow \sim a) \\ \\ \hline (\sim a) \\ b \end{array}$	$\begin{array}{l} \sim a \vee b \\ \\ b \rightarrow c \\ \\ \hline a \quad \quad \\ c \wedge a \end{array}$	$\begin{array}{l} a \rightarrow \sim b \\ \\ \sim b \rightarrow \sim c \\ \\ \hline a \quad \quad \\ \sim c \vee b \end{array}$			
a) Valid b) Invalid	a) Valid b) Invalid	a) Valid b) Invalid			

10	If $b \wedge \sim a$ is true Then $b \vee c$ is choice a, b, or c	a) True b) False c) Cannot Determine
11	If $(\sim a \rightarrow b) \vee c$ and $(\sim a \rightarrow b)$ are True Then c is one of the choices a, b, or c	a) True b) False c) Cannot Determine

12	If $\sim c \rightarrow d$ is true Then $\sim d$ is choice a, b, or c	a) True b) False c) Cannot Determine
13	If $\sim d$ is True and $\sim(\sim c \leftrightarrow \sim d)$ is False Then c is one of the choices a, b, or c	a) True b) False c) Cannot Determine
14	If a and b are True Then $(a \wedge b) \vee \sim s$ is one of the choices a, b, or c	a) True b) False c) Cannot Determine
15	If a and b are True and c is False Then $[a \rightarrow (b \wedge \sim c)]$ is one of the choices a, b, or c	a) True b) False c) Cannot Determine
16	If $\sim c \vee (d \wedge a)$ is True and c is False Then d is one of the choices a, b, or c	a) True b) False c) Cannot Determine
17	If $\sim(c \rightarrow \sim d)$ and $d \rightarrow a$ is True Then a is one of the choices a, b, or c	a) True b) False c) Cannot Determine

18-25	Directions : Use the TF method to determine if each given argument is A) valid or B) Invalid.		
18) $\sim c$ $(\sim c \rightarrow \sim a)$ <u>$\sim(\sim a \wedge b)$</u> $\sim b \vee s$	19) $\sim a \vee b$ c <u>$b \rightarrow \sim c$</u> $\sim a \wedge b$	20) $(\sim a \rightarrow b) \vee \sim c)$ $\sim c \rightarrow d$ <u>$\sim d \wedge \sim b$</u> $(\sim e \vee a)$	21) $a \rightarrow (b \rightarrow c)$ $(c \wedge d) \rightarrow e$ $f \rightarrow (b \wedge d)$ <u>$\sim(\sim f \vee \sim a)$</u> e
a) Valid b) Invalid	a) Valid b) Invalid	a) Valid b) Invalid	a) Valid b) Invalid

22)	23)	24)	25)
$\begin{array}{l} b \rightarrow \sim a \\ c \vee b \\ \hline \sim c \\ a \rightarrow d \end{array}$	$\begin{array}{l} \sim(c \wedge d) \vee \sim e \\ \sim a \vee (b \rightarrow c) \\ f \rightarrow (b \wedge d) \\ \hline (f \wedge a) \wedge g \\ \hline e \end{array}$	$\begin{array}{l} \sim c \rightarrow b \\ b \rightarrow \sim a \\ \hline \sim c \\ (\sim a \vee \sim b) \end{array}$	$\begin{array}{l} b \rightarrow a \\ a \rightarrow (c \vee d) \\ \hline b \wedge \sim c \\ \hline d \end{array}$
A)Valid	A)Valid	A)Valid	A)Valid
B)Invalid	B)Invalid	B)Invalid	B)Invalid

END OF PROJECT 3