

Using First Order Predicate Calculus, represent the following

i. All Rugby players are strong
 $\forall X (\text{rugby_player}(X) \rightarrow \text{strong}(X))$

ii. Nobody likes Icecream
 $\neg \exists X \text{ likes}(X, \text{icecream})$

iii. Some people like Ugali
 $\exists X (\text{person}(X) \wedge \text{likes}(X, \text{ugali}))$

iv. If it does not rain on Monday, Jane will attend Lectures
[8 Marks]

$\neg \text{weather}(\text{rain}, \text{monday}) \rightarrow \text{attend}(\text{jane}, \text{lectures})$

(a) Is the following Well Formed Function *valid*? Justify your answer with a truth table
[10Marks]

$$[(P \Rightarrow Q) \wedge (Q \Rightarrow R)] \Rightarrow (P \Rightarrow R)$$

LET $P \Rightarrow Q) \wedge (Q \Rightarrow R)$ be **A**

And $(P \Rightarrow R)$ be **B**

2^n where $n=3 = 8$

P	Q	R	$P \Rightarrow Q$	$Q \Rightarrow R$	A	B	$A \Rightarrow B$
T	T	T	T	T	T	T	T
T	T	F	T	F	F	F	T
T	F	T	F	T	F	T	T
T	F	F	F	T	F	F	T
F	T	T	T	T	T	T	T
F	T	F	T	F	F	T	T

<i>F</i>	<i>F</i>	<i>T</i>	<i>T</i>	<i>T</i>	<i>T</i>	<i>T</i>	<i>T</i>
<i>F</i>	<i>F</i>	<i>F</i>	<i>T</i>	<i>T</i>	<i>T</i>	<i>T</i>	<i>T</i>

SINCE FOR ALL interpretation its T then its valid