Name: _____
Student ID: _____

Assignment: Natural Deduction (Sub Proof)*

Question 1. *(20 marks)* Provide a justification (rule and line numbers) for each line of these proofs.

1	$A \Rightarrow B$	
2	$\neg A \Rightarrow C$	
3	$A \vee \neg A$	
4	A	
5	B	
6	$B \vee C$	
7	$A \Rightarrow (B \vee C)$	
8	$\neg A$	
9	C	
10	$B \vee C$	
11	$\neg A \Rightarrow (B \vee C)$	
12	$B \vee C$	

1	$Z \Rightarrow (C \wedge \neg N)$	
2	$\neg Z \Rightarrow (N \wedge \neg C)$	
3	$Z \vee \neg Z$	
4	Z	
5	$C \wedge \neg N$	
6	C	
7	$N \vee C$	
8	$Z \Rightarrow (N \vee C)$	
9	$\neg Z$	
10	$N \wedge \neg C$	
11	N	
12	$N \vee C$	
13	$\neg Z \Rightarrow (N \vee C)$	
14	$N \vee C$	

*from Proofs and Concepts: the fundamentals of abstract mathematics by Dave Witte Morris and Joy Morris