Dawson College: Principles of Mathematics and Logic: 360-124-DW: Winter 2013

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	$A \lor \neg A$	
4	A	
5	В	
6	$B \vee C$	
7	$A \Rightarrow (B \vee C)$	
8	$\neg A$	
9	С	
10	$B \vee C$	
11	$\neg A \Rightarrow (B \lor C)$	
12	$B \lor C$	
_		
1	$Z \Rightarrow (C \land \neg N)$	
2	$\neg Z \Rightarrow (N \land \neg C)$	
3	$Z \vee \neg Z$	
4		
	Z	
5	Z $C \land \neg N$	
5 6	$C \wedge \neg N$ C	
	$C \wedge \neg N$	
6 7	$C \wedge \neg N$ C	
6 7	$C \land \neg N$ C $N \lor C$	
6 7 8 9	$C \land \neg N$ C $N \lor C$ $Z \Rightarrow (N \lor C)$	
6 7 8 9	$C \land \neg N$ C $N \lor C$ $Z \Rightarrow (N \lor C)$ $\neg Z$	
6 7 8 9 10	$C \land \neg N$ C $N \lor C$ $Z \Rightarrow (N \lor C)$ $\neg Z$ $N \land \neg C$	
6 7 8	$C \land \neg N$ C $N \lor C$ $Z \Rightarrow (N \lor C)$ $\neg Z$ $N \land \neg C$ N	

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