Duration: **20 minutes** Aids Allowed: **NONE**

Student Number: _____

Last (Family) Name: _____

First (Given) Name(s): _____

Tutorial Room: _____ **TA's Name:** _____

This question uses the following database:

Computer	LAN	WAN
1	No	Yes
2	No	No
3	Yes	Yes
4	No	Yes
5	Yes	No
6	No	Yes

Consider the statement:
(S1) All computers on a WAN are not on a LAN.

(a) State whether (S1) is true or false. If it is false, then justify your answer by citing a specific counter-example.

False, Computer 3 is a counterexample, because it is on a WAN and a LAN.

(b) Write (S1) in precise symbolic notation.

Let C = set of all computers
Let L(c) = c is on a LAN
Let W(c) = c is on a WAN
$\forall$ c $\in$ C, W(c) $\rightarrow \neg$ L(c)

(c) Write the converse of (S1) in English and in precise symbolic notation.

If a computer is not on a LAN, then the computer is on a WAN.
Let C = set of all computers
Let L(c) = c is on a LAN
Let W(c) = c is on a WAN
$\forall$ c $\in$ C, $\neg$ L(c) $\rightarrow$ W(c)