

Quiz 2B: Logical Equivalence

CS/MATH 113 Discrete Mathematics L1

Habib University — Spring 2023

Total Marks: 5
Duration: 10 minutes

Date: January 19, 2023
Time: 1715–1725h

Student ID: _____

Student Name: _____

1 Problems

1. (5 points) We are given the following definitions.

Definition 1.1 (Conjunction, \wedge).

p	q	$p \wedge q$
T	T	T
T	F	F
F	T	F
F	F	F

Definition 1.2 (Implication, \implies).

p	q	$p \implies q$
T	T	T
T	F	F
F	T	T
F	F	T

Definition 1.3 (Biconditional, \iff).

p	q	$p \iff q$
T	T	T
T	F	F
F	T	F
F	F	T

Use these to prove the following claim.

$$(p \implies q) \wedge (q \implies p) \equiv p \iff q.$$