

# Quiz 2C: 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** (Disjunction,  $\vee$ ).

$p$	$q$	$p \vee q$
$T$	$T$	$T$
$T$	$F$	$T$
$F$	$T$	$T$
$F$	$F$	$F$

Use these to prove the following *distributivity law*.

$$p \wedge (q \vee r) \equiv (p \wedge q) \vee (p \wedge r).$$