

Validity by truth tree.

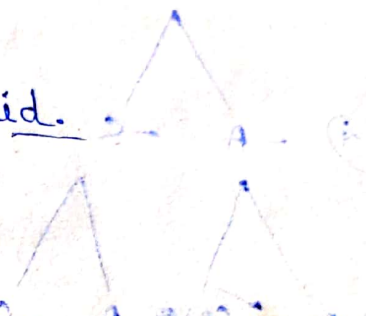
S. Chowdhury

4.2

$$\frac{A \downarrow B}{A/B}$$

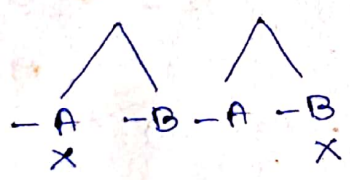
- 1) $A \downarrow B$ [premise]
- 2) $\neg (A/B)$ [Denial of the conclusion]
- 3) $\neg \neg A$
 $\neg \neg B$ [from -2]
- 4) $\neg A$
 $\neg B$
 X [from -1]

[is more?] Valid.



5)
$$\frac{A/B}{A \downarrow B}$$

- 1) A/B [premise]
- 2) $\neg (A \downarrow B)$ [Denial of the conclusion]
- 3) A B [from -2]

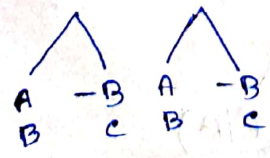


Invalid

counter Example: $A = \text{True}$
 $B = \text{False}$.

6)
$$\frac{[A, B, C]}{A \downarrow C}$$

- 1) $[A, B, C]$ [premise]
- 2) $\neg (A \downarrow C)$ [Denial of the conclusion]
- 3) A C [from -2]



Invalid

counter Example: $A = \text{True}$
 $B = \text{True}$
 $C = \text{False}$.

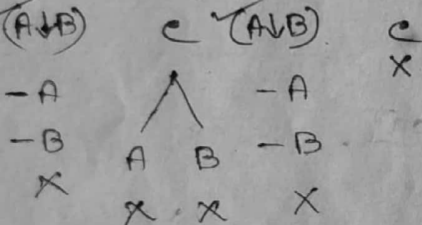
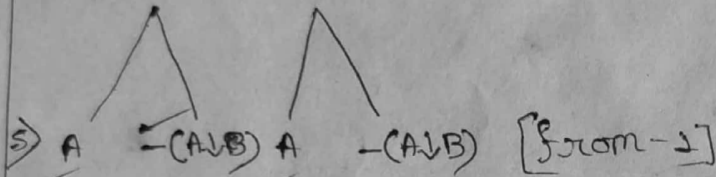
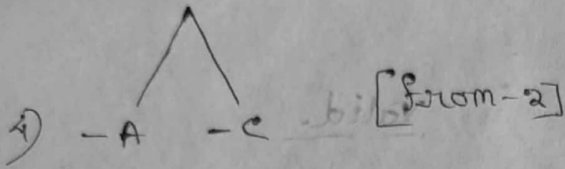
$$\frac{A, (A \downarrow B), C}{A \downarrow C} \\ B$$

1) $[A, (A \downarrow B), C]$

2) $A \downarrow C$

3) $\neg B$

Denial of the conclusion



Valid

h) $[A, (A \downarrow B), C]$

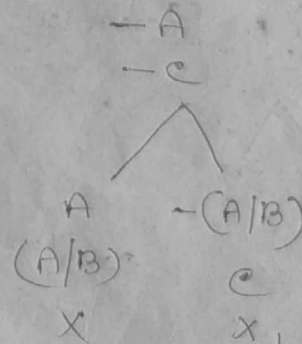
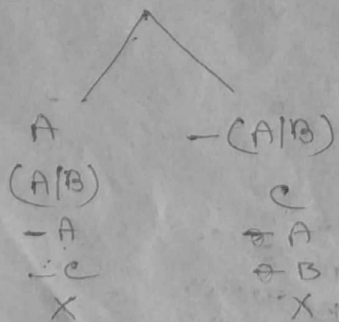
$$\frac{A \downarrow C}{B}$$

1) $[A, (A \downarrow B), C]$

2) $A \downarrow C$

3) $\neg B$

Denial of the premise



This argument is valid.