

⑧

1.  $A \rightarrow A$

| A | <del>A</del> | $\neg A \rightarrow \neg A$ | $A \wedge A$ | $A \vee A$ |
|---|--------------|-----------------------------|--------------|------------|
| T | T            | T                           | T            | T          |
| F | F            | T                           | F            | F          |

Consistent

2.

| ABC   | $A \vee B$ | $A \rightarrow C$ | $B \rightarrow C$ |
|-------|------------|-------------------|-------------------|
| T T T | T          | T                 | T                 |
| T T F | T          | F                 | F                 |
| T F T | T          | T                 | T                 |
| T F F | T          | F                 | F                 |
| F T T | T          | T                 | T                 |
| F T F | T          | T                 | F                 |
| F F T | F          | F                 | T                 |
| F F F | F          | F                 | F                 |

Consistent



3

| ABC   | $B \wedge (C \vee A)$ | $A \rightarrow B$ | $\neg(B \vee C)$   |
|-------|-----------------------|-------------------|--------------------|
| T T T | T T T T               | T T T             | F T T T            |
| T T F | T T F T               | T T T             | F T T F            |
| T F T | F F T T               | T F F             | F F T T            |
| T F F | F F F T               | T F F             | T F F F            |
| F T T | T T T F               | F T T             | F T T T            |
| F T F | T F F F               | F T T             | F T T F            |
| F F T | F F T T               | F T F             | F F <del>T</del> T |
| F F F | F F F F               | F T F             | T F F F            |

Inconsistent

4.

| ABC   | $A \leftrightarrow (B \vee C)$ | $C \rightarrow \neg A$ | $A \rightarrow \neg B$ |
|-------|--------------------------------|------------------------|------------------------|
| T T T | T T T T                        | F F T                  | T F F T                |
| T T F | T T T F                        | F T F T                | T F F T                |
| T F T | T T F T                        | T F F T                | T T T F                |
| T F F | T F F F                        | F T F T                | T T T F                |
| F T T | F F T T                        | T T T F                | F T F T                |
| F T F | F F T T                        | F T T F                | F T F T                |
| F F T | F F F T                        | T T T F                | F T T F                |
| F F F | F T F F                        | F T T F                | F T T F                |

Consistent



1

| A | $A \rightarrow A$ | A |
|---|-------------------|---|
| T | T                 | T |
| F | F                 | F |

← not true

2.

| A | $A \rightarrow (A \wedge \neg A)$ | $\neg A$ |
|---|-----------------------------------|----------|
| T | F                                 | F        |
| F | T                                 | T        |

Correct

3.

| A | B | $A \vee (B \rightarrow A)$ | $\neg A \rightarrow \neg B$ |
|---|---|----------------------------|-----------------------------|
| T | T | T                          | T                           |
| T | F | T                          | F                           |
| F | T | T                          | T                           |
| F | F | F                          | F                           |

correct

4.

incorrect

| A | B | C | $A \vee B$ | $B \vee C$ | $\neg A$ | $B \wedge C$ |
|---|---|---|------------|------------|----------|--------------|
| T | T | T | T          | T          | F        | T            |
| T | T | F | T          | T          | F        | F            |
| T | F | T | T          | F          | F        | F            |
| T | F | F | T          | F          | F        | F            |
| F | T | T | F          | T          | T        | T            |
| F | T | F | F          | T          | T        | F            |
| F | F | T | F          | F          | T        | F            |
| F | F | F | F          | F          | T        | F            |



5.

| ABC   | $(B \wedge A) \rightarrow C$ | $(C \wedge A) \rightarrow B$ | $(C \wedge B) \rightarrow A$ |   |
|-------|------------------------------|------------------------------|------------------------------|---|
| T T T | T T T                        | T T T                        | T T T                        | ✓ |
| T T F | T T F                        | F F T                        | T T T                        |   |
| T F T | F F T                        | T T F                        | T F T                        |   |
| T F F | F F T                        | F F T                        | F F F                        | ✓ |
| F T T | T F F                        | T F F                        | T T T                        | X |
| F T F | T F F                        | F F F                        | T F T                        | ✓ |
| F F T | F F T                        | T F F                        | T F F                        | ✓ |
| F F F | F F F                        | F F F                        | F F F                        | ✓ |

Incorrect