

1. P: The election is decided
q: The votes have been counted

- a) $\neg p$: The election is not decided.
- b) $p \vee q$: The election is decided or the votes have been counted.
- c) $\neg p \wedge q$: The election is not decided and the votes have been counted.
- d) $q \rightarrow p$: If the votes have been counted, then the election is decided.
- e) $\neg q \rightarrow \neg p$: If the votes have not been counted, then the election is not decided.
- f) $\neg p \rightarrow \neg q$: If the election is not decided, then the votes have not been counted.
- g) $p \leftrightarrow q$: The election is decided if and only if the votes have been counted.
- h) $\neg q$: The votes have not been counted

Therefore, $\neg q \vee (\neg p \wedge q)$: The votes have not been counted or the election is not decided and the votes have been counted.

2. a. An inclusive or: this is because if you experience in both, you will still be considered
b. An exclusive or: Lunch can include either salad or soup but not both
c. An exclusive or: it is so because if you publish, you will not perish.
d. An inclusive or: this is because, if you have either only a passport or ECOWAS identity card, you will be allowed to enter the country. If you have both, you will also be allowed entry
3. a. True.
b. True
c. True
d. False