

Discrete Math — Homework 1 Solutions

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Q1

propositions: a, b

proposition a is *true*.

proposition b is *false*.

Q2

(a) $p \rightarrow q$ means if u have the flu, u'll miss the final examination.

(b) $\neg p \leftrightarrow r$ means u don't have the flu if and only if u pass the course.

(c) $q \rightarrow \neg r$ means if u miss the final examination, then u won't pass the course.

(d) $(p \rightarrow \neg r) \vee (q \rightarrow \neg r)$ means either your having the flu or your missing the fianl examination will make u fail the course.

(e) $(p \wedge q) \vee (\neg q \wedge r)$ means either u have the flu and miss the final examination or u don't miss the final exam and pass the course.

Q3

see another paper

Q4

(a) $11000 \wedge (01101 \vee 11011) = 11000 \wedge 11111 = 11000$

(b) $(01111 \wedge 10101) \vee 01000 = 00101 \vee 01000 = 01101$

(c) $(01010 \oplus 11011) \oplus 01000 = 10001 \oplus 01000 = 11001$

(d) $(11011 \vee 01010) \wedge (10001 \vee 11011) = 11011 \wedge 11011 = 11011$

Q5

(a) $q \rightarrow p$

(b) $q \wedge \neg p$

(c) $q \rightarrow p$

Q6

- (a) because both types of cannibals will answer *No*.
- (b) if i were to ask u whether u are a liar, what would u say?