

Ling 320, Exam 1. Solution. 5 October 2007. *Answers are written in italics!*

Part 1: Identifying Inferences.

- (1) a. No one is jumping. *(a) entails (b)*
b. No one is jumping high.
- (2) a. Everyone is breathing. *(b) entails (a)*
b. Everyone is breathing deeply.
- (3) a. Everyone who is a student can get a discount. *(a) entails (b)*
b. Everyone who is a linguistics student can get a discount.
- (4) a. She put the key under the mat. b. There is a key.

(4a) entails (4b), as (4a) is true whenever (4b) is true, with the result that 'a and not b' is a contradiction:

c. She put the key under the mat, but it's not the case that there is a key.

Further, (4a) presupposes (4b), as (4b) projects:

- d. She didn't put the key under the mat. → There is a key.*
e. Maybe she put the key under the mat. → There is a key.
f. If she put the key under the mat, we're in luck. → There is a key.

- (5) a. It was a little bad. b. It wasn't horrible.

(5b) is an implicature, as it is deniable:

*c. It was a little bad, in fact it was horrible.
reinforceable:*

d. It was a little bad, but it wasn't horrible.

and calculable by the Maxim of Quantity, which requires that a speaker make the most informative relevant answer. Assuming that horrible and little bad form a strength scale, <horrible, little bad>, asserting little bad implicates that horrible does not hold.

- (6) a. They, too, escaped.
b. Someone besides ('other than') them escaped.

(6a) entails (6b), as (6b) is true whenever (6a) is, and 'a and not b' is contradictory:

c. They, too, escaped, but it's not the case that someone other than them escaped.

(6b) is also presupposed by (6a), since it projects:

- d. It's not the case that they, too, escaped. → (6b)*
e. Maybe they, too, escaped. → (6b)
f. If they, too, escaped, let's celebrate. → (6b)

- (7) a. They, too, escaped. b. They escaped.

(7a) entails (7b), as (7b) is true whenever (7a) is, and 'a and not b' is contradictory:

c. They, too, escaped, but it's not the case that they escaped.

(7a) does not presuppose (7b), since (7b) does not project:

- d. It's not the case that they, too, escaped. -/-> (7b)*
e. Maybe they, too, escaped. -/-> (7b)
f. If they, too, escaped, let's celebrate. -/-> (7b)

- (8) a. Mathieu tried to stop time.
b. Mathieu stopped time.

(8a) does not entail (8b), since (8a) can be true while (8b) is not, and 'a and not b' is not contradictory:

c. Mathieu tried to stop time, but it's not the case that Mathieu stopped time.

(8a) also does not implicate (8b), since (8b) is not calculable by the maxims of conversation. (8a) is thus in no relation to (8b).

Part 2: Set Theory.

Assume the following sets:

$$\begin{array}{lll} A = \{\text{Mars}, \{\emptyset\}, \text{Leo}\} & B = \{\{\text{Mars}\}, \emptyset\} & C = \emptyset \\ D = \{\emptyset\} & E = \{\text{Mars}\} & F = \{\text{Leo}\} \end{array}$$

U is the union of A, B, C, D.

If U is the answer to a problem, you may simply write U (i.e., you need not specify all of the members of U).

(i) True or False:

- (9) $\text{Mars} \in E$ T
- (10) $\emptyset \in B$ T
- (11) $\emptyset \in A$ F
- (12) $F \subseteq A$ T
- (13) $\{\emptyset\} \subseteq A$ F
- (14) $\{\emptyset\} \subseteq B$ T
- (15) $E \in B$ T
- (16) $\{\text{Mars}\} \in \{X \mid X \in B\}$ T
- (17) $\{x \mid x \notin A\} = A'$ T
- (18) $\{x \mid x \in \{y \mid y \text{ is alive}\}\} = \{x \mid x \text{ is alive}\}$ T

(ii) Specify the following sets:

- (19) $E \cup F$ $\{\text{Mars}, \text{Leo}\}$
- (20) $A \cap E$ $\{\text{Mars}\}$
- (21) $A - F$ $\{\text{Mars}, \{\emptyset\}\}$
- (22) $D - C$ $\{\emptyset\}$
- (23) $D - A$ $\{\emptyset\}$
- (24) $C \cap D$ \emptyset
- (25) $(U \cup F)'$ \emptyset
- (26) $\wp(A \cup B) \cap C$ \emptyset