Entrance Test Semantics 2

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You can reach a total number of 65 (+4) points in this test. You have to reach more than 50% of the points to be admitted to the class, i.e. at least 33 points.
Please send your solution as a pdf file to sailer@em.uni-frankfurt.de.
Deadline is **October 16, 2016**.
Unfortunately I will only be able to correct your solution in the first week of the term, so please, come to the first meeting of the class in any case.

1 Predicate Logic

Task 1: Ambiguous sentences (7 points)
Consider the following ambiguous sentences:

(1) a. Every ship went through a tempest.
b. Miranda pitied the men on the ship.
c. Antonio tried to persuade Sebastian to kill his brother.
d. Prospero and Antonio arrived on the island.

1. For **each** of these, determine the type of ambiguity.
2. Pick **one** of the sentences provide an unambiguous paraphrase for the possible readings.

Task 2: Model and Interpretation (7 points)

1. Define a universe that consists of Miranda and Prospero.
2. Define the interpretation of the names **miranda** and **prospero** in an intuitively plausible way.
3. Define the interpretation of the properties $\mathbf{young}_1$, $\mathbf{sorcerer}_1$, and $\mathbf{islander}_1$ is such a way that Miranda is young, Prospero is a sorcerer and both are islanders.
4. Define the interpretation of the 2-place relations $\mathbf{child\text{-}of}_2$ and $\mathbf{like}_2$ in such a way that Miranda is Prospero's child and Miranda and Prospero like each other and themselves.

Task 3: Formulæ (5 points)
Write down logical formulæ that express the meaning of the following sentences.

1. Miranda is a sorcerer.
2. Prospero is young but a parent to Miranda.
3. If Prospero is not an islander, then Miranda likes Prospero.

Task 4: Interpreting formulæ (8 points)
Compute the interpretation of the following formulæ step by step.

1. $\mathbf{young}_1(\mathbf{miranda})$
2. $\neg\mathbf{like}_2(\mathbf{prospero}, \mathbf{prospero})$
3. $\mathbf{sorcerer}_1(\mathbf{prospero}) \supset \mathbf{child\text{-}of}_2(\mathbf{prospero}, \mathbf{miranda}))$

Task 5: Variables (3 points)
Provide a g-function that maps the variables x, y, and z to individuals from the universe and compute the interpretation of the following formula with respect to the model and your g.

(i) $\textbf{child-of}_2(y, z)$

Task 6: Quantifiers (4 points)
Provide logical formulæ that expresse the meaning of the following sentences. Are the formulæ true in **your** model (not in the entire play)? Give a short reason (you don't need to compute the truth value).

1. A sorcerer likes Miranda.
2. Every islander is young.

2 Lexical Resource Semantics

Task 7: Analysis: Lexicon (9 points)
Provide the lexical entries for the words in the sentence *Miranda likes Prospero.* Use the features as given in figure 1. You may work with the simplified AVM and you can ignore the EX-CONT value on words.

Normal AVM

$$\begin{bmatrix} \text{PHON} & ??? \\ \text{SYNSEM} & \begin{bmatrix} \text{LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & ??? \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & ??? \\ \text{SPR} & ??? \\ \text{COMPS} & ??? \end{bmatrix} \end{bmatrix} \\ \text{CONT} & \begin{bmatrix} \text{DR} & ??? \end{bmatrix} \end{bmatrix} \end{bmatrix} \\ \text{LRS} & \begin{bmatrix} \text{EX-CONT} & ?? \\ \text{PARTS} & ??? \end{bmatrix} \end{bmatrix}$$

Simplified AVM

$$\begin{bmatrix} \text{PHON} & ??? \\ \text{HEAD} & ??? \\ \text{SUBJ} & ??? \\ \text{SPR} & ??? \\ \text{COMPS} & ??? \\ \text{DR} & ??? \\ \text{EX-CONT} & ??? \\ \text{PARTS} & ??? \end{bmatrix}$$

Figure 1: Features used in AVMs

Task 8: Analysis: Syntactic structure and semantic combinatorics (13 points)
Using the lexical entries from Task 7, provide the syntactic structure of the sentence *Miranda likes Prospero.* Indicate **all** the values for all features at each node in the tree.

Task 9: General mechanisms of LRS (6 points)

1. Enumerate all possible logical forms that would be compatible with the PARTS list of the sentence from Task 8.
2. How do we manage to prevent some of the hypothetically possible logical forms that you listed in subtask 1 from occurring?

Task 10: Local semantic phenomena (3 points)
What kind of semantic restriction of the underlined predicates is violated in the deviating forms of the following sentences? Give a reason for your decision.

1. [Prospero's betrayer]/??[Prospero's betrayal] <u>appeared</u> on the island.
2. ?? O <u>brave</u> new world that has such people in't!

Task 11 (Optional): Local semantics phenomena (4 points)
Consider the following data on the verb *marry.* Characterize informally the sortal restrictions on its arguments and some further semantic selectional restrictions.

(2) a. Miranda married Ferdinand/ ??[Ferdinand and Sebstian].
b. ??The bottle married Trinculo.
c. #The tempest married the ship.
d. #Water married land.

Good luck!