

# Questionario di Agenti Intelligenti (Intelligenza Artificiale II)

**Intelligent Agents, First Part 4 Maggio 2011**  
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**Name, Surname..... Code.....**

## EVALUATION CRITERIA

The test has the following structure:

- 6 close questions, 2 points each (total 12 points), 0 points if no answer;
- 2 open questions, 4 points each (total 8 points), -2 points each if the answer is omitted or heavily inadequate. per
- 2 exercises, 5 points each (total 10 points), -3 points each if the solution is omitted or heavily inadequate.

For open questions, correctness and completeness of the answer are of course relevant to the evaluation. However, preciseness, also in terminology, will be evaluated.

Each exercise must be completely developed and explained (just providing the result is not accepted). Evaluation will depend upon correctness, completeness and fulfillment of requirements.

Answers and solutions should be written on the enclosed sheets of paper (use also the reverse in case of lack of space). Please make sure that your handwriting is understandable.

**You are expected to complete the test within 1 hour and 45 minutes**

1. Tell which of the functions below is **not** proper of a purely reactive agent:
  - a) perform actions in response to external events;
  - b) select which action to perform via a reasoning process;
  - c) establish the most urgent event via priorities.

2. In “Speech Act Theory”, the component of a communicative act corresponding to the action that the speaker expects the receiver to perform in consequence of the communication is called:

- a) locution;
- b) illocution;
- c) perlocution.

3. In any ACL, each message includes a primitive, often called *performative* (e.g., *inform*). It corresponds to the following component of a communicative act in “Speech Act Theory”:

- a) locution;
- b) illocution;
- c) perlocution.

4. In BDI agents,

- a. Beliefs represent: .....
- b. Desires represent: .....
- c. Intentions represent: .....

5. The AgentSpeak language implements the BDI approach:

- a. fully;
- b. with some limitations.

6. In “practical reasoning agents”, tell which form of commitment describes an agent who, if in the course of its action concludes that the current objective is no longer reachable, promptly drops the objective without waiting for a failure to occur.

- a) blind commitment;
- b) single-minded commitment;
- c) open-minded commitment

7. **A** Shortly discuss the differences between “practical reasoning agents” (of which the BDI agents are an important representative) and purely reactive architectures, such as the “subsumption

architecture” and “behavior networks”.

8.A Describe AgentSpeak: discuss its main features also by means of a sample rule.

9.E Consider the following ASP program. Compute its answer sets and explain the procedure that you have followed. Remember that the constraint has to be translated into pure ASP as an even cycle with a handle.

```
flies(X):- obj(X), not noflies(X).  
noflies(X):- obj(X), not flies(X).
```

```
:- obj(X),flies(X), not bird(X).
```

```
bird(a).  
dog(b).  
obj(a).  
obj(b).
```



10.E. Write an Answer Set Program describing the following situation. You have various kinds of food, among which (at least) pasta, meat, fish and cake. You also have red wines and white wines. A meal is composed of at least two kinds of food, but must include pasta (it cannot avoid including it) and cannot include simultaneously meat and fish (only one can be present). Optional: each meal includes exactly one wine, that cannot be red if you have fish. Hint: exploit cardinality constraints.



