MA410 Artificial Intelligence Quiz 1 - 27th September 2010.

Answer *all* questions. Supply complete answers on double-sided sheet.
Marks for each question given in brackets. Time allowed: *25* mins.

Name: _____ Student ID: _____

1. **History and Research** ***(27 marks)***

   (a) Give a brief description of the Turing Test. *(6)* _____

   _____

   _____

   (b) Name *3* current restrictions on a machine's ability that prevent it from passing the Turing Test? *(3)*

   _____

   (c) Name *one* main researcher & a contribution they've made to AI from the disciplines: *(6 = 3 * 2)*

   - Computer Science: _____
   - Maths (excluding Alan Turing): _____
   - Linguistics or Philosophy: _____

   (d) Name and explain *one* area of latest research in AI. What technologies does it use? *(5)*

   _____

   _____

   (e) How might AI be used to automatically correct typographical errors? *(3)* _____

   _____

   (f) Name *two* areas of latest research not already mentioned. *(4)* _____

2. **Intelligence** ***(15 marks)***

   (a) What does intelligence mean? *(4)* _____

   (b) Explain what Artificial Intelligence is and what the study of it entails. *(5)* _____

   _____

   _____

   (c) Some connection within both a computer system and a brain is damaged. The computer malfunctions but the brain is able to process perfectly the same information. Explain. *(6)*

   _____

3. **Computer Terms** ***(24 marks = 6 * 4)***

(a) Explain the following terms in the context of Artificial Intelligence:

i. Genetic Algorithms _____

ii. Neural Networks _____

iii. Expert Systems _____

iv. Robotics _____

v. Heuristics _____

vi. Semantic Web _____

4. **Knowledge Processing** ***(14 marks)***

(a) Name *three* forms of knowledge representation structures used in computer programs. *(6)*

_____

(b) Name *one* aspect of natural language which is difficult for A.I. *(1)* _____

(c) Create an English sentence with granularity & an inverse relationship. Convert to logical syntax. Explain. *(7)*

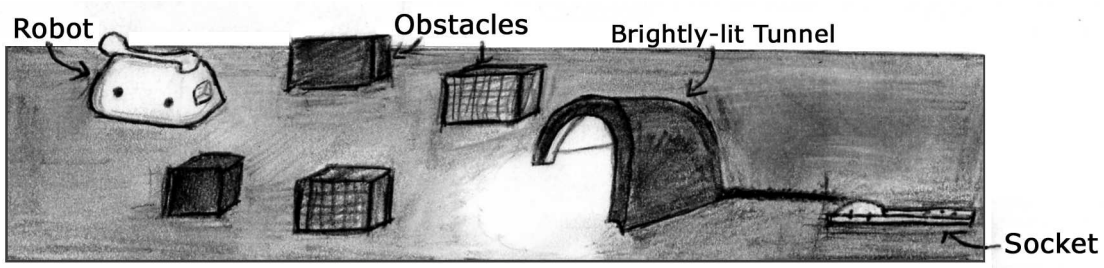
_____

_____

_____

5. **AI Example** ***(20 marks)***

(a) A battery-operated robot, with a light sensor, is switched on and placed in a room. It is able to avoid obstacles and is attracted to light but avoids bright light. A brightly-lit tunnel with a battery recharger is plugged in. (see diagram below)



i. What intelligent behaviour(/s) will this robot simulate? Explain in full. *(15)*

_____

_____

_____

ii. What could you introduce to illustrate the robot's inability to adapt to a new environment? *(5)*

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