Answer all questions

1. - Explain the differences between fuzzy systems and probabilistic inference systems.
   OR
   - Explain how the Hopfield network dynamics (continuous or discrete) accomplishes energy minimization.

2. Describe alpha-beta search and illustrate its application to a small example.

3. What is the connection between logic programming and automated reasoning?

4. Suggest a modification of Ramer's polygonal approximation algorithm to transform closed curves into polygons. Assume that each closed curve is described as a list of circular arcs. Each arc is described in terms of the circle radius, circle center location, and angle subtended by the arc at the center.

5. Bond works for M.
   M works for the British government.
   The British government works to increase the wealth of some of its subjects.
   "Works for" is a transitive relation.
   Those who work for the same employer do not try to kill each other.
   Bond tries to kill Blofeld.

   Translate the above statements into first order logic, and use resolution to show that Blofeld does not work for Bond. A formal proof is expected.

6. Discuss the main ideas underlying any four of the following A.I. projects:
   (a) CYC
   (b) GPS
   (c) HEARSAY
   (d) AM
   (e) MYCIN
   (f) PROSPECTOR

7. Suggest how A.I. techniques may be applied to improve the performance of web browsers or internet search engines.

8. What is the Closed World Assumption? Suggest how it (or its variants) may be implemented in a common-sense reasoning system, e.g., one based on resolution.