**Sheet No. (1) Subject: Artificial intelligent**

**Question 1: Describe briefly:**

a) The Turing Test "imitation game". (Illustrate through drawing)

b) The Total Turing Test

c) Systems that “Act/Behave Rationally”, and Systems that “Act/Behave Humanly”.

d) “Weak AI Hypothesis” versus the “Strong AI Hypothesis”.

e) The two most fundamental concerns of AI researchers.

f) Intelligent Agents

**Question 2:** Define the following terms:

a. State Space Graph.

b. Exhaustive Search.

c. Heuristics.

d. Path.

e. Rooted Graph.

f. Tree

**Question 3:**

* The following is a problem which can be solved using state-space search techniques: The Cannibals and Missionaries problem: "Three cannibals and three missionaries come to a crocodile infested river. There is a boat on their side that can be used by either one or two persons. If cannibals outnumber the missionaries at any time, the cannibals eat the missionaries. How can they use the boat to cross the river so that all missionaries survive?" Formalize the problem in terms of state-space search. You should:
  + Suggest a suitable representation for the problem state.
  + State what the initial and final states are in this representation.
  + State the available operators/rules for getting from one state to the next, giving any conditions on when they may be applied.
  + Draw the first two levels of the directed state-space graph for the given problem.
* Solve the following problem "A farmer with his dog, rabbit and lettuce come to the east side of a river they wish to cross. There is a boat at the river’s edge, but of course only the farmer can row. The boat can only hold two things (including the rower) at any one time. If the dog is ever left alone with the rabbit, the dog will eat it. Similarly, if the rabbit is ever left alone with the lettuce, the rabbit will eat it. How can the farmer get across the river so that all four characters arrive safely on the other side?
  + Suggest a suitable representation for the problem state.
  + State what the initial and final states are in this representation.
  + State the available operators/rules for getting from one state to the next, giving any conditions on when they may be applied.
  + Draw the first two levels of the directed state-space graph for the given problem.