PRACTICE PAPER 1

Artificial Intelligence

Paper / Subject Code: 48893

Time: 3 hours **Max. Marks: 80**

Note: (1) Question 1 is compulsory.
(2) Answer any three out of remaining questions.
(3) Assume suitable data where required.

Q. 1 - Solve any 4 [20 marks]

a) What is PEAS descriptor? Give PEAS descriptor for Medical Diagnosis System. **[05]**

b) Differentiate between supervised and unsupervised learning. **[05]**

c) Draw and explain architecture of Expert System. **[05]**

d) Convert into FOPL: (i) Everyone likes everyone (ii) All graduates are unemployed **[05]**

e) Write a short note on AI Perspectives: Acting and Thinking humanly. **[05]**

Q. 2 [20 marks]

a) Explain different types of AI agents with neat diagrams. Compare Utility based agent and Goal based agent. **[10]**

b) Discuss different types of environments for Intelligent Agents. Explain environment properties for 8-Queen problem. **[10]**

Q. 3 [20 marks]

a) Explain Hill Climbing algorithm with an example. Discuss its inherent limitations and propose effective solutions to address those limitations. **[10]**

b) Explain A* algorithm in detail with an example. Also discuss its performance. **[10]**

Q. 4 [20 marks]

a) Illustrate forward chaining and backward chaining in propositional logic with example. **[10]**

b) Consider the following statements:
(a) Ravi likes all kind of food.
(b) Apple and Chicken are food.
(c) Anything anyone eats and is not killed is food.
(d) Ajay eats peanuts and still alive.
(e) Rita eats everything that Ajay eats.

Prove that "Ravi likes Peanuts" using Resolution technique. Draw resolution tree. **[10]**

Q. 5 [20 marks]

a) Define chromosome, selection, fitness function, crossover and mutation as used in Genetic Algorithm. Explain how Genetic Algorithm works with a detailed example. **[10]**

b) Explain Alpha-Beta pruning algorithm with an example. Apply alpha beta pruning on a given game tree considering the first node as MAX. **[10]**

Q. 6 [20 marks]

a) Define Bayesian Belief Network. Describe the steps of constructing belief network with a detailed example. **[10]**

b) What is planning in AI? Explain Partial Order Planning with a detailed example. **[10]**
