(3 Hours)   **Total Marks: 80**

1) Q.1 is compulsory

2) Attempt any **three** from remaining **five** questions

Q1) Solve **any four** of the following:

    a) Describe different types of environment of AI agents   [5]

    b) What do you mean by Total Turing test. Explain.   [5]

    c) Explain Utility based Agent with a block diagram   [5]

    d) Formulate the 8 puzzle problem   [5]

    e) Describe the characteristics of a part picking robot using the PEAS properties   [5]

Q2) a) What do you understand by Min Max Search and alpha beta search? Explain in detail with example.   [10]

    b) What do you understand by A* search? Is it informed or uninformed search – Justify.   [10]

Q3) a) Explain steps involved in converting propositional logic statement into CNF with suitable example   [10]

    b) What do you understand by forward chaining and backward chaining. Explain in detail   [10]

Q4) a) Explain various methods of knowledge representation.   [10]

    b) What are local search algorithms? Explain any one in detail.   [10]

Q5) a) What is planning in AI? Discuss partial order planning and hierarchical planning in detail   [10]

    b) What do you understand by Reinforcement learning. Explain in detail.   [10]

Q6) Write short notes on **any two** of the following: [20]

    a)   Wumpus World Environment

    b)   Applications of AI

    c)   Natural Language Processing

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