Time: 3 Hours **Max Marks: 80**

Instructions:

- **Figures to the right indicate max marks.**
- **Draw appropriate diagram whenever applicable.**
- **Assume suitable data wherever applicable. State your assumptions clearly.**
- **Question number 1 is compulsory.**
- **Attempt any Three questions from remaining questions.**

Q1	**Attempt Any Four from the following. (5 marks each)**	**20**
	A) What is PEAS? Give PEAS description for a Medical Diagnosis System.	
	B) Define Artificial Intelligence. Explain any two application areas.	
	C) Compare deterministic and stochastic environments with suitable examples.	
	D) Write a PROLOG program to calculate the factorial of a given number.	
	E) Explain why uncertainty occurs in AI systems. How can probability theory be applied in the insurance domain?	
Q2	A) Describe the Missionaries and Cannibals Problem using problem formulation (state, operators, goal,constraints).	**10**
	B) Explain different inference rules in First Order Predicate Logic with examples.	**10**
Q3	A) Explain Bayesian Belief network with example.	**10**
	B) Explain the Decision Tree algorithm using the example: “Whether to wait for a table in a restaurant”.	**10**
Q4	A) Illustrate forward and backward chaining in propositional logic with example.	**10**
	B) Explain different types of environments for intelligent agents. Describe the environment for the 8-Queens problem.	**10**
Q5	A) What do you understand by Min Max Search and alpha beta search? Explain in detail with example.	**10**
	B) Give the comparative analysis of BFS and DFS based on performance measures.	**10**
Q6	A) Explain Supervised and Unsupervised Learning with examples.	**10**
	B) Write a PROLOG program to check whether a number is even or odd.	**10**

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