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**MCA/M- 13**
**ARTIFICIAL INTELLIGENCE**
**Paper- MCA- 405(iii)**

*Time allowed : 3 hours*] [ *Maximum marks : 80*

**Note : Attempt five questions in all, selecting at least one question from each unit.**
**. Question No. 1 is compulsory.**

**1. (a) What is modus ponen?**
**(b) What is inductive inference?**
**(c) What are the space complexities of Depth First Search and Breadth first Search?**
**(d) What is branching factor of a tree?**
**(e) What is anonymous variable in PROLOG?**
**(f) What is Prenex Normal Form (PNF) ?**
**(g) What are alpha and beta values in mini-max search?**
**(h) What is unit resolution?**

**UNIT-I**

**2. (a) What is Artificial Intelligence? What are the factors motivating the use of Artificial Intelligence? Explain.**
**(b) What do you understand by resolution? Differentiate between set of support And linear input form resolution strategies using suitable examples.**
**3. What is most general unifier (mgu) ? What are the rules of unification? Write The unification algorithm to find the mgu.**

**UNIT-II**

**4. What do you understand by heuristic search? Discuss the hill climbing search Using suitable example. Also explain the problems of foothill and plateau in hill climbing search.**
**5. Differentiate between following :**
**(a) Admissibility and monotonicity**
**(b) Data driven and goal driven search.**

**UNIT-III**

**6. What do you understand by a production system? What are the components of it? Differentiate between commutative and non-commutative production system.**
**7. What is expert system? Write a note on Stanford certainty factor algebra to manage uncertainty in Expert System.**

**UNIT-IV**

**8. Explain the use of cut and fail predicates to prevent and enforce backtracking Respectively. Use suitable examples.**
**9. What do you understand by evolutionary algorithm? What is genetic**

**algorithm (GA) ? Explain the crossover and mutation operator using suitable examples.**