11. a) Explain the following types of Hill Climbing search techniques.

i) Simple Hill Climbing. **(4)**

ii) Steepest-Ascent Hill Climbing. **(5)**

iii) Simulated Annealing. **(4)**

(OR)

b) Discuss Constraint Satisfaction problem with an algorithm for solving a Cryptarithmetic problem. **(13)**

12. a) Consider the following sentences : **(13)**

- John likes all kinds of food
- Apples are food
- Chicken is food
- Anything anyone eats and isn't killed by is food
- Bill eats peanuts and is still alive
- Sue eats everything Bill eats.

i) Translate these sentences intoformulas in predicate logic.

ii) Convert the formulas of part a into clause form.

(OR)

b) Trace the operation of the unification algorithm on each of the following pairs of literals : **(13)**

i) f(Marcus) and f(Caesar)

ii) f(x) and f(g(y))

iii) f(Marcus, g(x, y)) and f(x, g(Caesar, Marcus)).

13. a) Explain the production based knowledge representation technique. **(13)**

(OR)

b) i) Discuss about Bayesian Theory and Bayesian Network. **(6)**

ii) Describe in detail about Dempster-Shafer theory. **(7)**