PART – B (5 × 16 = 80 Marks)

11. (a) (i) Explain the Heuristic functions with examples. **(6)**

(ii) Write the algorithm for Generate and Test and simple Hill Climbing. **(10)**

OR

(b) Solve the given problem. Describe the operators involved in it. **(16)**

Consider a Water Jug Problem : You are given two jugs, a 4-gallon one and a 3-gallon one. Neither has any measuring markers on it. There is a pump that can be used to fill the jugs with water. How can you get exactly 2 gallons of water into the 4-gallon jug ? Explicit Assumptions: A jug can be filled from the pump, water can be poured out of a jug onto the ground, water can be poured from one jug to another and that there are no other measuring devices available.

12. (a) Convert the following well formed formula into clause form with sequence of steps. **(16)**

$\forall x$: [Roman(x) $\wedge$ Know(x,Marcus)] $\rightarrow$ [hate(x, Caesar) $\vee$ ($\forall y$: $\exists z$: hate(y,z) $\rightarrow$ thinkcrazy(x,y))]

OR

(b) (i) Write the resolution procedure for prepositional logic. **(8)**

(ii) Explain the Iterative Deepening Algorithm. **(8)**

13. (a) (i) Briefly explain how reasoning is done using fuzzy logic. **(6)**

(ii) Explain Dempster-Shafer Theory. **(10)**

OR

(b) What is Forward Chaining and how does it work ? Explain the forward Chaining algorithm with an example. **(16)**

14. (a) (i) Describe the components of a planning system. **(10)**

(ii) What is ID3 ? Write the drawback of ID3. **(6)**

OR

(b) (i) Describe the Hierarchical planning method with an example. **(8)**

(ii) Describe the Learning with Macro-Operators. **(8)**

15. (a) (i) Explain about the Knowledge acquisition. **(10)**

(ii) Write the characteristic features of Expert systems. **(6)**

OR

(b) (i) Explain the basic components of an expert system. **(10)**

(ii) Write any six applications of expert systems. **(6)**
