PART B — (5 × 16 = 80 marks)

11. (a) (i) Exemplify the necessary components to define an AI problem with an example. (6)

(ii) Consider a water jug problem. You are given 2 jugs : a 4-gallon and a 3-gallon jugs. Neither has any measuring mark in it. There is a pump that can be used to fill the jugs with water. How can you get exactly 2-gallon of water into a 4-gallon jug? State the production rules for the water jug problem. (10)

Or

(b) (i) Write the algorithm for steepest ascent hill climbing. (4)

(ii) Explain DFS algorithm with an example. (8)

(iii) State the characteristics of an AI problem. (4)

12. (a) Explain resolution in predicate logic with suitable example. (16)

Or

(b) Consider the following sentences :

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

(i) Translate these sentences into formulae in predicate logic (10)

(ii) Convert the above FOL into clause form. (6)

13. (a) Explain in detail about forward chaining and backward chaining with algorithms. (16)

Or

(b) What is Dempster-Shafer theory? Explain with suitable example. (16)

14. (a) (i) Describe hierarchical planning method with an example. (8)

(ii) Describe learning with macro-operators. (8)

Or

(b) (i) Explain the various types of learning in problem solving. (6)

(ii) Explain learning in Decision Tree with example. (10)

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

(ii) Brief any six applications of expert systems. (6)

Or

(b) Explain with neat diagram the architecture of expert system and mention its features. (16)

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