B.E. I.T. (VII) (CBGS).   4/12/15

Intelligent system

Q.P. Code : 5960

N.B. : (1) Question No. 1 is **compulsory**.
       (2) Attempt any **Three** of the remaining **Five** questions.

1. (a) What is AI? List dawn all components of AI.   3
   (b) List dawn all properties of Agent Task Environment explain in short any one.   3
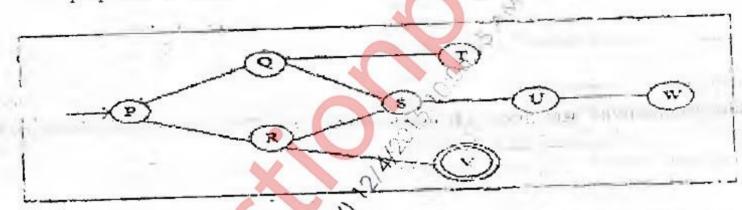   (d) What do you mean by heuristic function? Why it is use?   3
   (e) What is Expert system shell explain in short.   3
   (f) What is Reasoning? Write its role in AI in Short.   3
   (h) Give the Comparative analysis of Uninformed Search techniques.   5

2. (a) Consider the following graph starting from P execute DFS, the goal node is   10
       V. Show the order in which the nodes are expanded. Assume that the
       alphabetically smaller node is expanded first to break ties and also write the
       properties of DFS.

   (b) List down all the types of agent architecture. Explain utility based and learning   10
       agent.

3. (a) Suppose you are designing a machine to pass the Turing test. What are the   5
       capabilities such machine must have? Explain?
   (b) Represent following sentences in first order logic.   10
       (i)   Every gardener like the sun.
       (ii) All purple mushrooms are poisonous.
       (iii) Every student who takes French passes it.
       (iv) No person buys an expensive policy.
   (c) Write the Planning algorithm for Spare Tyre Problem.   5
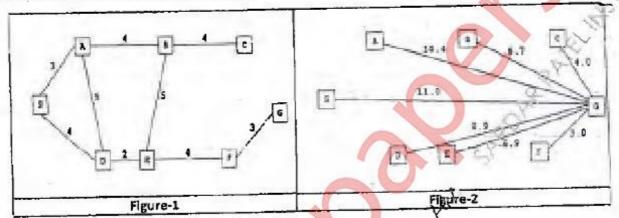
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MD-Con. 9985-15.

4. (a) What is state space search? Formulate the state space search problems for 8- **5** puzzle problem.

(b) Draw and explain expert system architecture. Also give the differentiation **10** between forward chaining and backward chaining.

(c) Figure 1 is an example of a route finding problem. S is the starting state, G is the goal state. Run the greedy search algorithm for the graph given in Figure **5** 1 and write order of the node in which it is explored. The straight line distance heuristic estimates for the nodes are shown in Figure 2.
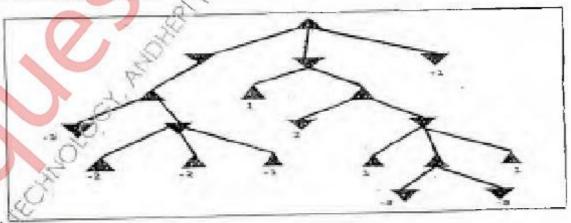

Figure-1   Figure-2

5. (a) Given a full 5 gallon jug and an empty 2 gallon jug, the goal is to fill the 2 **5** gallon jug with exactly one gallon of water do the state space formulation and also discuss which strategy is appropriate for this problem.

(b) Write down the agent task environment and its characteristics for the **5** Crossword puzzle with justification.

(c) Apply Min-Max algorithm and Min Max algorithm along with Alpha Beta **10** pruning on given game tree then find which the next move is. (Note:-Δ: Max node and ∇: Min node)

6. Write Short note on any **Four**.

(a) Conditional Probability and Its role in AI.

(b) Ontology.

(c) Bayesian Network.

(d) WUMPUS World environment.

(e) Decision Tree.