Question Paper Code : X 67543

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020
Sixth Semester
Computer Science and Engineering
CS 1351 – ARTIFICIAL INTELLIGENCE
(Regulations 2008)

Time : Three Hours   Maximum : 100 Marks

Answer ALL questions
PART – A   **(10×2=20 Marks)**

1. Give an example of a problem for which breadth-first-search would work better than depth-first-search.

2. Define intelligent agent with an example.

3. What is the disadvantages of the Best-First Search technique ?

4. How can you calculate minmax value for games that include an element of chance ?

5. Decide whether the following sentences is valid, unsatisfiable or neither :
Smoke $\Rightarrow$ Heat.

6. Represent the following sentence in first-order logic : No person buys an expensive policy.

7. State explanation based learning with an example.

8. What is inductive learning ?

9. How machine translation systems are implemented ?

10. What do you mean by Grammar induction ?

PART – B   **(5×16=80 Marks)**

11. a) i) Distinguish an agent of AI and non AI program.   **(8)**
       ii) Explain tree search algorithm in detail.   **(8)**

(OR)

   b) i) Write short notes on the following Depth First Search and breath first search. **(8)**

      ii) Write short notes on Iterative deepening depth first search. **(8)**

12. a) How will you Solve n-Queens problem using backtracking method ? Explain the algorithm and draw the state space tree that is generated. **(16)**

             (OR)

   b) Explain the various refinements added to improve the performance of minmax procedure. Illustrate with an example. **(16)**

13. a) Illustrate the use of first-order-logic to represent the knowledge. **(16)**

             (OR)

   b) Elaborate the Forward and Backward chaining. **(16)**

14. a) In the recursive construction of decision trees, it sometimes happens that a mixed set of positive and negative examples remains at a leaf node, even after all the attributes have been used. Suppose that we have p positive example and n negative examples, show that the class probability $p/(p + n)$ minimizes the sum of squared errors. **(16)**

             (OR)

   b) Suppose that a training set contains only a single example, repealed 100 times. In 80 of the 100 cases, the single output values is 1; in the other 20 it is 0. What will be a back propagation network predict for this example, assuming that it has been trained and reaches a global optimum ? **(16)**

15. a) i) For the following sentence, explain the processes involved in communication. **(10)**

          "I feel a breeze".

      ii) Explain top-down parsing and bottom-up parsing in syntactic analysis. **(6)**

             (OR)

   b) i) What are the characteristics of Information Retrieval ? How do Bayes rules apply to IR systems ? **(8)**

      ii) Give details about machine translation. **(8)**

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