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Question Paper Code : 19AI1B

B.E / B.Tech DEGREE EXAMINATION, NOV / DEC 2021

Third / Fifth Semester

Artificial Intelligence and Machine Learning

AI19341 - PRINCIPLES OF ARTIFICIAL INTELLIGENCE

(Common to Computer Science and Engineering)

(Regulations 2019)

Time : Three Hours

Maximum : 100 Marks

Answer ALL Questions

PART A (10 x 2 = 20 Marks)

1. What are intelligent agents? Illustrate it.
2. List down the issues in the design of search programs.
3. How should a Heuristic Function be designed to provide a solution? Give example.
4. Compare simulated annealing with hill climbing algorithm?
5. How would you formulate Constraint Satisfaction Problem? Give example.
6. What is meant by stochastic game in AI domain? Is Chess a stochastic game? Justify?
7. Differentiate conditional probability and Bayes theorem.
8. List down the applications of fuzzy logic in Artificial Intelligence?
9. What are markov decision process in machine learning?
10. How is prediction different from classification?

PART B (5 x 13 = 65 Marks)

11. a. i) What do you mean by PEAS? Elaborate on PEAS representation for any four types of agent? (8)
ii) Explain the PEAS requirement for designing an automated medical diagnosis system? (5)

(OR)

- b. Summarize in detail about problem characteristics in the domain of Artificial Intelligence. Correlate each characteristic with a real time system.

12. a. Describe Depth first search and Depth limited search with suitable illustration.
(OR)
b. Write short notes on
i) Greedy best-first search. (4)
ii) A* search . (4)
iii) Memory bounded heuristic search. (5)
13. a. Explain the implementation of alpha- beta pruning for minimax algorithm?
(OR)
b. Analyze the effects of backtracking search to constraint satisfaction Problems and explain the same with suitable algorithm?
14. a. Explain forward and backward chaining algorithm with suitable illustration?
(OR)
b. Elucidate dempster- shafer theory in detail and summarize their implications?
15. a. Elaborate on Linear regression and Support Vector regression algorithms?
(OR)
b. Describe the basic components of Convolutional Neural Networks (CNN)?

PART C (1x15=15 Marks)

16. a. Consider the facts:
1) The members of the Elm St. Bridge Club are Joe, Sally, Bill, and Ellen.
2) Joe is married to Sally.
3) Bill is Ellen's brother.
4) The spouse of every married person in the club is also in the club.
5) The last meeting of the club was at Joe's house.
Convert to predicate logic and prove that "Ellen is not married".

(OR)

- b. Solve the given crypt arithmetic problem,

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