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15CS562

Fifth Semester B.E. Degree Examination, July/August 2021 Artificial Intelligence

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions.

- 1 a. Discuss Program 1 and Program 2 with respect to Tic-Tac-toe game. (08 Marks)
b. A water Jug problem states "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?"
 - (i) Write down the production rules for the above problem.
 - (ii) Write any one solution to the above problem. (08 Marks)
- 2 a. Explain Depth First Search (DFS) and Breadth First Search (BFS) algorithm. (08 Marks)
b. Explain simple hill climbing and steepest ascent hill climbing algorithm. (08 Marks)
- 3 a. Discuss the various approaches of knowledge representation. (08 Marks)
b. Write well-formed-formulas (wff's) in predicate logic for the given facts:
 - (i) Marcus was a man.
 - (ii) Marcus was a Pompeian.
 - (iii) All Pompeians were Roman.
 - (iv) Caesar was a ruler.
 - (v) All Romans were either loyal to Caesar or hated him.
 - (vi) Everyone is loyal to someone.
 - (vii) People only try to assassinate rules they are loyal to.
 - (viii) Marcus tried to assassinate Caesar. (08 Marks)
- 4 a. Write an algorithm to convert well-formed formulas (wff's) into clause form. (08 Marks)
b. Write a short note on procedural knowledge and declarative knowledge. (08 Marks)
- 5 a. Discuss the concept of uncertainty with the help of ABC murder story. (08 Marks)
b. Explain Baye's theorem. (08 Marks)
- 6 a. Write an algorithm for property inheritance. (08 Marks)
b. Apply Baye's theorem for a given problem.
Problem : Marie's marriage is tomorrow.
 - (i) In recent years, each year it has rained only 5 days.
 - (ii) The weatherman has predicted rain for tomorrow.
 - (iii) When it actually rains, the weatherman correctly forecast rain 90% of the time.
 - (iv) When it doesn't rain, the weatherman incorrectly forecasts rain 10% of the time.The question : What is the probability that will rain on the day of Marie's wedding? (08 Marks)
- 7 a. Explain Conceptual Dependency (CD). (08 Marks)
b. Explain the components of a script with an example. (08 Marks)
- 8 a. Explain MINMAX search procedure. (08 Marks)
b. Explain alpha-beta cutoffs. (08 Marks)
- 9 a. Explain various steps involved in natural language processing. (08 Marks)
b. Explain candidate elimination algorithm. (08 Marks)
- 10 a. Mention any four major problems with respect to current expert system. (08 Marks)
b. Discuss various learning strategies. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.