CBCS SCHEME

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18AE643

Sixth Semester B.E. Degree Examination, Jan./Feb. 2023
Artificial Intelligence and Expert System

Time: 3 hrs. Max. Marks: 100

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. Articulate all the possible solutions for Tic-Tac-Toe game playing in artificial intelligence. **(10 Marks)**

b. Demonstrate water Jug problem for the problem statement "You are given two Jugs, a 4-ℓts one and 3-ℓts one, a pump which has unlimited water which you can use to fill the Jug. Neither Jugs has any measuring marks on it. How can you get exactly 2-ℓts of water in 4-ℓts Jug. **(10 Marks)**

OR

2 a. What is production system in AI? Explain any three characteristics of AI problems. **(10 Marks)**

b. Explain the solution to word clock problem write steepest Ascent hill climbing algorithm. **(10 Marks)**

Module-2

3 a. Mention the various characteristics possessed by a system for representation of knowledge. **(02 Marks)**

b. Briefly describe various approaches of knowledge representation. **(16 Marks)**

c. Define frame problem, mention one example. **(02 Marks)**

OR

4 a. Consider the following sentences :

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

i) Translate these sentence into formula in predual logic
ii) Prove that John likes peanuts using backward chaining
iii) Convert the formulas of part into clause form. **(12 Marks)**

b. Consider the sentence in 4a and answer the below queries :
i) Prove that John likes peanuts using resolution. **(08 Marks)**

Module-3

5 a. Consider problem of finding clothes to wear in morning. The knowledge required to solve this is given below :
i) Wear jeans unless either they are dirty and you have job interview today
ii) Wear sweater if it's cold
iii) It's usually cold in winter
iv) Wear sandals if it's warm
v) It's usually warm in summer
Build JTMS – Style database of necessary facts to solve this problem. **(10 Marks)**

b. Consider above problems knowledge and illustrate how the problem can be solved and how solution changes as relevant facts (such as time and distances) change. **(10 Marks)**

OR

6 a. Write short notes on Bayerian networks and Dempster Shafes theory. **(10 Marks)**

b. Consider following prepositions :
Patient has spots
Patent has measles
Patient has high fever
Patent has RMSF
Patient has previously been innoculated against measles
Patient was recently bitten by a lick
Patient has allergy
Create a network that define casual connection between these nodes. **(10 Marks)**

Module-4

7 a. Establish sematic net representation for following :
i) Pompeian (Marcus), Blacksmith (Marcus)
ii) Many gave the green flowered vase to her favorite cousin. **(10 Marks)**

b. Consider sematic net

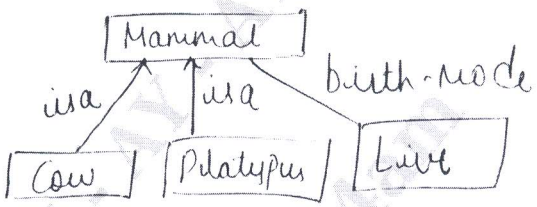

Fig.Q7(b)

Represent this information in JTMS format by considering an additional fact that platypus layed eggs. **(10 Marks)**

OR

8 a. Elucidate the algorithm of MINIMAX search procedure with example. **(10 Marks)**

b. Mention the Heuristics for planning using constraint porting and explain TWFAK planning algorithm. **(10 Marks)**

Module-5

9 a. Elucidate the concept of semantic analysis in detail. **(10 Marks)**

b. Explain the concept of discourse and pragmatic processing in AI. **(10 Marks)**

OR

10 a. Elucidate the concept of Back propagation algorithm in neural networks in AI with example. **(10 Marks)**

b. List the various application of neural network. Explain the recurrent networks technique working in detail. **(10 Marks)**

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