BRAINWARE UNIVERSITY

Term End Examination 2022
Programme – M.Tech.(CSE)-AIML-2022
Course Name – Artificial Intelligence and Knowledge Representation
Course Code - PCC-MCSM102
(Semester I)

Full Marks : 60   **Time : 2:30 Hours**
[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question)   1 x 15=15

1.   *Choose the correct alternative from the following :*

(i)   describe The summation of initial state and goal state make a

a) Problem Space   b) Problem instance
c) Problem Space Graph   d) None of these

(ii)   Select what is the rule of simple reflex agent?

a) Simple-action rule   b) Condition-action rule
c) Both Simple-action rule & Condition-action rule   d) None of these

(iii) Identify the State space in artificial intelligence belongs to

a) complete problem   b) your definition to a problem
c) Problem that you design   d) Representing your problem with variable and parameter

(iv)   state what is Artificial intelligence?

a) Putting your intelligence into Computer   b) Programming with your own intelligence
c) Making a Machine intelligent   d) Playing a Game

(v)   Identify What can operate over the joint state space?

a) Decision-making algorithm   b) Learning algorithm
c) Complex algorithm   d) Both Decision-making & Learning algorithm

(vi)   Describe The structure of an agent.

a) Agent = Architecture / Agent Program   b) Agent = Architecture * Agent Program
c) Agent = Architecture + Agent Program   d) Agent = Architecture - Agent Program

(vii) Select Hill-Climbing approach stuck for the following reason(s)

a) Local maxima   b) Ridges
c) Plateau   d) All of these

(viii) Illustrate Value of utility function for representing state space diagram for tic-tac-toe are

a) 1,2,0　　　　　　　　　　　　　　b) 1,1,1
c) 1,-1,0　　　　　　　　　　　　　　d) -1,-1,0

(ix) Select A search technique that combines the strengths of uniform-cost search and greedy search_____.

a) It is not optimal　　　　　　　　b) A* graph Search
c) A* Tree Search　　　　　　　　　d) None of these

(x) Select from the options: The form by which Constraint satisfaction problems on finite domains are solved_____.

a) Search Algorithms　　　　　　　b) Heuristic Search Algorithms
c) Greedy Search Algorithms　　　　d) All of these

(xi) Justify What kind of environment is used by adversarial search problems?

a) Cooperative Environment　　　　b) Competitive Environment
c) Neither Competitive nor Cooperative　　d) Only Competitive and Cooperative
    Environment　　　　　　　　　　　　Environment

(xii) Choose form the following: John is very intelligent. This statement can be completely expressed in _____

a) FOPL　　　　　　　　　　　　　b) Fuzzy logic
c) Default logic　　　　　　　　　　d) Propositional logic

(xiii) Calculate What is the heuristic function of greedy best-first search?

a) f(n) != h(n)　　　　　　　　　　b) f(n) < h(n)
c) f(n) > h(n)　　　　　　　　　　　d) f(n) = h(n)

(xiv) Justify What are you predicating by the logic: Û·x: Ð•y: loyalto(x, y).

a) Everyone is loyal to someone　　　b) Everyone is not loyal to someone
c) Everyone is loyal to all　　　　　　d) Everyone is loyal

(xv) Solve the problem: In water jug problem, the rule Pour water from 3-gallon jug into 4-gallon jug until 4-gallon jug is full, is represented as :

a) (X+Y,0)　　　　　　　　　　　　b) (0,X+Y)
c) (X-(3-Y),3)　　　　　　　　　　　d) (4,Y-(4-X))

Group-B
(Short Answer Type Questions)　　　　　　　　　　3 x 5=15

2. Explain the problems in hill climbing search methods due to which they may fail to find the solution?　　(3)
3. Explain Knowledge Representation with an example?　　(3)
4. Explain DFS with iterative deepening in AI.　　(3)
5. Select the components of the production system?　　(3)
OR
   Differentiate DFS and BFS with an example　　(3)
6. "The goal of AI is to enable the machine to think without any human intervention."-Justify statement with your own view.　　(3)
OR
   Prepare a short note about Hill climbing search　　(3)

Group-C
(Long Answer Type Questions)　　　　　　　　　　5 x 6=30

7. Explain knowledge based system in the context of artificial intelligence?　　(5)
8. Explain Dempster-Shafer theory of uncertainty management.　　(5)
9. Define DFS with iterative deepening with an example.　　(5)
10. Mention the difference between breadthfirst search and best-first search in artificial　　(5)

intelligence?

<div align="center">**OR**</div>

Explain Turing test? (5)

11. Mention the difference between DFS and DFS with iterative deepening. (5)

<div align="center">**OR**</div>

Differentiate DFS, BFS and Bi Directional search. (5)

12. "Prepare a semantic network with the help of a diagram for the following set of knowledge: (5)
ABC is a university. CSE, ECE and EEE are three departments in it. Sudha works in department of CSE.CSE is located in C block. She is a professor. Every professor engages lectures and has PhD qualification. Sudhas area of interest in AI."

<div align="center">**OR**</div>

Estimate how does heuristic search adds information in search? (5)

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