BRAINWARE UNIVERSITY

Term End Examination 2023
Programme – Dip.CSE-2018/Dip.CSE-2019/Dip.CSE-2020
Course Name – Artificial Intelligence
Course Code - DCSE602
(Semester VI)

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) Identify the appropriate option where AI techniques can be applied:
   a) Agricultural sector   b) Health care sector
   c) Marketing sector   d) All of these

(ii) State the type of the composition for agents in artificial intelligence?
   a) Program   b) Architecture
   c) Both a & b   d) None of the mentioned

(iii) Identify the key component used to improve the agent's performance?
   a) Perceiving   b) Learning
   c) Observing   d) None of the mentioned

(iv) Identify how many types of agents available in artificial intelligence?
   a) 5   b) 10
   c) 100   d) 500

(v) Select the agent name that does the problem generator concept
   a) Learning agent   b) Observing agent
   c) Reflex agent   d) Passive agent

(vi) Relate which one a state space search is formulated by
   a) Intermediate state   b) Initial state
   c) Successor function, which takes current   d) None of these
      action and returns next immediate state

(vii) Express which one among the following can be created by the sum of initial state and goal state.
   a) Problem Space   b) Problem Space Graph
   c) Problem instance   d) Problem abstraction

(viii) Identify which one represents State space search concept in artificial intelligence?
   a) Your definition to a problem   b) Problem that you design
   c) Complete problem   d) Representing your problem with variable and parameter

(ix) Select the type of agent that enables the deliberation about the computational entities and actions

a) Hybrid
b) Relational
c) Reflective
d) None of the mentioned

(x) Recognize the concept that hiding detail representation

a) Extraction
b) Information Retrieval
c) Abstraction
d) Data mining

(xi) Associate which one is the formula of a heuristic function

a) f=h
b) f=h+g
c) f>g
d) f

(xii) Computing the performance of problem solving is represented by

a) Completeness
b) Optimality
c) Time and Space complexity
d) All of the mentioned

(xiii) Identify which of the following can be type of Forward reasoning (Top-Down) approach

a) Data driven
b) Goal driven
c) Knowledge driven
d) Resolution driven

(xiv) Classify the search algorithm that imposes a fixed depth limit

a) Depth-limited search
b) Depth-first search
c) Iterative deepening search
d) Bidirectional search

(xv) Identify which search technique uses the stack operation

a) Depth-first search
b) Breadth-first search
c) Bidirectional search
d) None of these

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

2. Express 4-Queen problem (3)
3. Write a short note about Software Agent. (3)
4. Compare between DFS and BFS. (3)
5. Classify different types of agents in AI. (3)
6. Analyze Goal Stack Planning with an example. (3)

OR

Explain briefly the different components of the Expert System. (3)

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

7. Establish the relationship between machine learning and artificial intelligence. (5)
8. Illustrate constraint satisfaction problems and explain how they are useful for AI. (5)
9. Explain the utility of heuristic search over blind search including time complexity. (5)
10. Discuss on the components of AI production system. (5)
11. Justify that whether Uniform Cost Search is a special case of A* search. (5)
12. Examine the following into first-order predicate logic. i) Every gardener likes the sun. ii) One can fool all of the people some of the time. iii) All purple mushrooms are poisonous. (5)

OR

You are given two jugs, a 4-gallon one and a 3-gallon one. Neither has any measuring mark 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? Describe production rules, represent state space diagram and give a possible solution. (5)