



# BRAINWARE UNIVERSITY

Term End Examination 2023-2024

Programme – B.Tech.(ECE)-2020

Course Name – Artificial Intelligence and Machine Learning

Course Code - OEC701A

( Semester VII )

Library  
Brainware University  
399, ... Barasat  
700125

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) choose the composition for agents in artificial intelligence?
- a) Program  
b) Architecture  
c) Both a & b  
d) None of the mentioned
- (ii) A\* heuristic evaluation function \_\_\_\_\_
- a)  $f(x)=h(x)$   
b)  $f(x)=h(x)+g(x)$   
c)  $f(x)=g(x)$   
d) none of the above
- (iii) In which agent does the problem generator is present?
- a) Learning agent  
b) Observing agent  
c) Reflex agent  
d) None of the mentioned
- (iv) Turing Test is used for \_\_\_\_\_.
- a) Measuring the success of an intelligent behavior of a system  
b) Measuring the fault of an intelligent behavior of a system  
c) Measuring the capacity of an intelligent behavior of a system  
d) None of these
- (v) A search technique uses forward and backward for initial state and goal state respectively till both meet to identify a common state \_\_\_\_\_.
- a) Bidirectional search  
b) Breadth- first search  
c) Depth- first search  
d) None of these
- (vi) Where one real and other artificial agents are simultaneously tested on the basis of equal ground?
- a) Utility based Test environment  
b) Turing Test environment  
c) Model based Test environment  
d) None of these
- (vii) Which agent enables the deliberation about the computational entities and actions?

- a) Hybrid  
 c) Relational
- b) Reflective  
 d) None of the mentioned
- (viii) Which search implements stack operation for searching the states?  
 a) Depth-first search  
 c) Bidirectional search
- b) Breadth-first search  
 d) None of the mentioned
- (ix) The concept of 'Frames' is  
 a) A way of representing knowledge  
 c) Data type
- b) Data structure  
 d) None of these
- (x) What conditions are must for competitive network to perform pattern clustering?  
 a) Nonlinear output layers  
 c) On centre off surround connections
- b) Connection to neighbors is excitatory and to the farther units inhibitory  
 d) None of the mentioned fulfills the whole criteria
- (xi) Hill-Climbing approach stuck for the following reason(s)  
 a) Local maxima  
 c) Plateau
- b) Ridges  
 d) All of above
- (xii) The adjective "first-order" distinguishes first-order logic from \_\_\_\_\_ in which there are predicates having predicates or functions as arguments, or in which one or both of predicate quantifiers or function quantifiers are permitted.  
 a) Representational  
 c) Higher Order Logic
- b) Representational Adequacy  
 d) Inferential Efficiency
- (xiii) What is the rule of simple reflex agent?  
 a) Simple-action  
 c) Both a & b
- b) Condition-action rule  
 d) None of the mentioned
- (xiv) The heuristic function is  
 a)  $f=h$   
 c)  $f>g$
- b)  $f=h+g$   
 d)  $f<g$
- (xv) The form by which Constraint satisfaction problems on finite domains are solved \_\_\_\_\_.  
 a) Search Algorithms  
 c) Greedy Search Algorithms
- b) Heuristic Search Algorithms  
 d) All of the mentioned

**Group-B**

(Short Answer Type Questions)

3 x 5=15

2. Explain with example 'Greedy best-first search' (3)
3. Write and explain the characteristics of AI Problem (3)
4. Express using proposition Logic ""Everyone likes ice cream" is equivalent", "there is no one who does not like ice cream"?
5. Short Description on A\* search ? (3)
6. Justify the fundamental goal of Knowledge Representation in AI (3)

**OR**

- "The goal of AI is to enable the machine to think without any human intervention."-Justify statement with your own view. (3)

**Group-C**

(Long Answer Type Questions)

5 x 6=30

7. Determine a machine's ability to exhibit intelligent behavior. (5)
8. Make the difference in a tabular form. i.e. AI: Computer to mimics human behavior, Machine Learning: subset of AI, consists of the techniques, Deep learning: enables computers to solve more complex problems. (5)
9. Explain the Turing test mechanism. (5)
10. Supervised Learning, Unsupervised Learning, Semi-supervised Learning, Reinforcement Learning, Transduction, Write Learning similarity . (5)
11. Consider two jugs a 4 gallon and a 3 gallon, Rule set, Production of the water jug problem. (5)
12. Illustrate Simulated Annealing with the help of an example. (5)

**OR**

Explain depth first search with an example and compare with Depth Limited Search (5)

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