BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – Dip.CE-2022
Course Name – Artificial Intelligence
Course Code - DCEOE602A
(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) Select the correct option which can be the proper meaning of the word 'Artificial'

a) Natural b) Machine made
c) Man made d) Automation made

(ii) Identify in the production system, what is the role of the production memory

a) Store the rules and facts b) Execute actions based on conditions
c) Perform inference and deduction d) Represent the current state of the problem

(iii) Identify the appropriate option where AI techniques can be applied.

a) Agricultural sector b) Health care sector
c) Marketing sector d) All of these

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

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

(v) Select the search algorithm that imposes a fixed depth limit.

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

(vi) Identify the search technique uses the stack operation

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

(vii) Indicate that Artificial Intelligence is categorized based on which of the following parameter

a) Based on functionally only b) Based on capabilities only
c) Based on capabilities and functionally d) It is not categorized

(viii) Identify from the following that best describes a major challenge in design search space

a) Insufficient data availability b) Lack of computational power
c) several solutions d) Limited algorithmic capabilities

(ix) Identify which one is correct regarding Information which is widely accepted by the Knowledge Engineers and scholars in the task domain

a) Factual Knowledge
b) Heuristic Knowledge
c) Acquisition knowledge
d) None of these

(x) Determine the next state and the action of an agent of the environment is fully obtained based on the current state:

a) Deterministic environment
b) Episodic environment
c) Non-deterministic environment
d) None of these

(xi) Identify where the Text planning is involved

a) Natural Language Understanding
b) Natural Language Generation
c) Both Natural Language Understanding and Natural Language Generation
d) None of these

(xii) Determine the following: "All women of age above 65 years are grandmothers. Rina is 70 years. Therefore, Rina is a grandmother."___it belongs to

a) Deductive Reasoning
b) Inductive Reasoning
c) Auditory Learning
d) None of these

(xiii) Identify Regression method is an example of which of the following.

a) Semi-supervised learning models
b) Reinforcement learning models
c) Supervised learning models
d) Unsupervised learning models

(xiv) Select the correct option :In a Production System, what does the 'Production' refer to:

a) Manufacturing processes
b) Set of rules or knowledge representations
c) Decision-making algorithms
d) Communication between AI systems

(xv) State the number of logical connectives that are used in AI system.

a) 2
b) 3
c) 4
d) 5

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Determine how resolution is used in predicate logic. (3)
3. Describe the working of the Simple Hill Climbing method and its main drawback. (3)
4. Define Artificial Intelligence (AI) and its primary goal. (3)
5. Differentiate between simple reflex agent and utility-based agent. (3)
6. Explain "AI is interdisciplinary in nature and its foundations are in various fields." (3)

OR

Explain the production system characteristics. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Contrast between Supervised and Unsupervised Learning. (5)
8. Classify the different types of reasoning techniques in AI. (5)
9. Discuss about application of AI in different relevant fields of study. (5)
10. Conclude the relationship between machine learning and artificial intelligence. (5)
11. Explain game theory in AI. (5)
12. Classify the various relationships in predicate logic. (5)

OR

Analyze the role of natural deduction in AI reasoning. (5)

****