Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University Estd. u/s 3 of UGC Act 1956, Category A by MHRD) (now MoE)
Re-accredited with A++ Grade by NAAC. CGPA 3.65/4, category I by UGC
Coimbatore - 641 043, Tamil Nadu, India

Bachelor's Degree Examination – May 2025
VI Semester

Class : III UG **Time : 3 Hours**
Major : Computer Science **Max. Marks: 100**

21BCSC28 Artificial Intelligence

Course Outcomes:
CO1:Develop computer applications based on perception & Learning
CO2: Simulate intelligence for reasoning and Learning
CO3: In depth Understanding to tackle any AI problem
CO4: Representing knowledge appropriately
CO5: Distinguishing ambiguity in grammars

Part A **10 x 1 = 10**
Choose the Correct Answer

1. Which of the following is NOT an application of AI? CO1K1
   a. Speech Recognition b. Medical Diagnosis
   c. Web Browsing d. Oil Refining

2. Which of the following is a primary component of an intelligent agent? CO1K2
   a. Sensors b. Actuators
   c. Environment d. All of the above

3. What is the main feature of an informed search algorithm? CO2K3
   a. It does not use any additional information
   b. It uses a heuristic function to guide the search
   c. It explores all paths equally
   d. It guarantees finding a solution in constant time

4. What is the primary goal of Alpha-Beta Pruning? CO2K2
   a. To completely explore all nodes in the search tree
   b. To find the exact heuristic value of each node
   c. To reduce the number of nodes evaluated in the minimax algorithm
   d. To increase the branching factor of the tree proportions.

5. What is the primary goal of knowledge representation in AI? CO3K2
   a. To store large amounts of data
   b. To enable reasoning and decision-making
   c. To improve internet search results
   d. To increase the speed of computation

6. In Backward Chaining, the search starts from CO3K2
   a. Initial state b. Goal state
   c. Root node of the search tree d. Any random node

7. What is the primary purpose of Ensemble Learning? CO3K4
   a. To train a single strong model
   b. To combine multiple models for better accuracy
   c. To reduce the size of the dataset
   d. To speed up the training process

8. Which of the following is a key component of Explanation-Based Learning? CO4K4
   a. Randomized exploration b. Prior domain knowledge
   c. Genetic algorithms d. Neural networks

9. What is an Augmented Grammar? CO3K2
   a. A grammar that has additional rules for parsing natural language
   b. A grammar that only supports context-free languages
   c. A grammar used only in deep learning models
   d. A type of neural network architecture

10. What is Syntactic Analysis ? CO4K1
a. The process of checking the grammatical structure of a sentence
b. The process of finding the meaning of a sentence
c. The process of speech recognition
d. The process of converting text to speech

Part B **5 x 6 = 30**

Answer ALL questions

Each answer should not exceed 400 words or two pages

11.a. What is Artificial Intelligence (AI)? Explain the Key Aspects of AI. CO1K1

(or)

11.b. Give a detailed explanation on Problem-Solving Agents with its steps. CO1K2

12.a. Explain the concept of a Heuristic Function in Artificial Intelligence. Discuss its importance CO2K3

(or)

12.b. Compare Backtracking Search and Local Search for solving CSPs. CO3K3

13.a Discuss First-Order Logic, its components and advantages with examples. CO3K4

(or)

13.b. What is Unification? List and explain on some basic conditions for unification. CO3K2

14.a. How logical formulation of learning is done in AI.Discuss CO4K4

(or)

14.b. What is inductive logic programming?. Explain in detail. CO4K2

15.a. Write a short note on online search agents. CO5K5

(or)

15.b. What is Ambiguity in artificial intelligence? What are the Causes of ambiguity? CO5K6

Part C **5 x 12 = 60**

Answer ALL questions

Each answer should not exceed 800 words or four pages

16.a. What is Turing Test approach in Artificial Intelligence. Discuss its working and types. CO1K2

(or)

16.b. Define Uninformed Search Strategies. Describe its different types along with their advantages, disadvantages, and real-world applications. CO1K1

17.a. What is the constraint satisfaction problem? Illustrate CO2K2

(or)

17.b. What is alpha and beta in pruning? What are the main condition which required for alpha-beta pruning? CO2K2

18.a. Explain the process of Knowledge Engineering in First-Order Logic. Discuss its key steps with suitable examples. CO3K4

(or)

18.b. Describe on Forward Chaining and Backward Chaining . Compare their working principles, and applications with examples. CO3K5

19.a. Explain Inductive Learning, Learning Decision Trees and Ensemble Learning with its features and challenges in its applications. CO3K5

(or)

19.b. What is statistical learning methods in artificial intelligence? Discuss in detail. CO4K4

20.a. Syntactic Analysis and Augmented Grammar-Define and explain its features.Illustarate. CO5K4

(or)

20.b. What is semantic interpretation? Explain any applications in detail. CO5K2