Printed page: …. …….. Subject Code: ACSBS0601

Roll No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEMVI- THEORY EXAMINATION (2022-2023)

Subject Artificial Intelligence

Time: 3Hours Max. Marks:100

General Instructions:

IMP: Verify that you have received question paper with correct course, code, branch etc.

1. This Question paper comprises of three Sections -A, B, & C. It consists of Multiple Choice Questions(MCQ's) & Subjective type questions.
2. Maximum marks for each question are indicated on right hand side of each question.
3. Illustrate your answers with neat sketches wherever necessary.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.
6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION A 20

1. Attempt All parts:- 1

1-a Which AI technique enables the computers to understand the associations and relationships between objects and events? (CO1) 1

a) Heuristic Processing
b) Pattern Matching
c) Cognitive Science

d) Relative Symbolism

1-b For propositional Logic, which statement is false? (C03) 1

e) The sentences of Propositional logic can have answers other than True or False.
f) Each sentence is a declarative sentence.
g) Propositional logic is a knowledge representation technique in AI.
h) None of the above

1-c On which approach the face recognition system is based? (CO1) 1

a. Weak AI Approach
b. Cognitive AI Approach
c. Strong AI Approach
d. Applied AI Approach

1-d In Tic-Tac-Toe, the board can be represented as an array ____ cell. (CO3) 1

a. Six
b. nine
c. ten
d. four

1-e Which agent deals with the happy and unhappy state? (CO5) 1

a) Utility-based agent
b) Model-based agent
c) Goal-based agent
d) Learning agent

1-f An agent can improve its performance by (CO4) 1

a) Learning
b) Responding
c) Observing
d) Perceiving

1-g Which one is the uninformed search? (CO2) 1

a) DFS.

b) Alpha-beta pruning
c) Best First Search
d) None of the above

1-h Which one is the problem of Hill climbing search algorithm? (CO2) 1

a) Uniform
b) Global maximum
c) Reform
d) None of the above

1-i Which of the following are Components of Expert Systems? (CO4) 1

a) Knowledge Base
b) Inference Engine
c) User Interface
d) All of the above

1-j The Bayesian Network gives_____. (CO5) 1

a) Partial Description of the domain
b) A complete description of the domain
c) complete description of the problem
d) None of the above

Subject Code: ACBS00601

2.a Define the term AI. What are the advantages of AI (CO1) 2

2.b Explain standard minmax algorithms along with their applications. (CO2) 2

2.c Describe monkey banana problem along with its solution. (CO3) 2

2.d Define reinforcement learning. Explain its key features. (CO4) 2

2.e Briefly explain Goal-based agents. (CO5) 2

SECTION B 30

Answer any five of the following-

3.a Describe problem representation paradigm in artificial intelligent. (CO1) 6

3.b	Briefly describe different models of designing intelligent agents. (CO1)	6
3.c	Explain Alpha-Beta pruning in details. (CO2)	6
3.d	Describe the characteristics of Heuristics search techniques for making machines intelligent. (CO2)	6
3.e	Explain the applications of Predicate logic system in logic development. (CO3)	6
3.f	Explain the rule based learning system with example. (CO4)	6
3.g	Describe Ant colony optimization. (CO5)	6

SECTION C 50

4. Answer any one of the following -

4.a	Describe the role of artificial intelligence in social life. Also explain the advantages and disadvantages of AI. (CO1)	10
4.b	Describe the state space representation of Artificial Intelligence. (CO1)	10

5. Answer any one of the following

5.a	Describe breadth-first search and depth-first search strategies and compare their performances. (CO2)	10
5.b	Describe the role of searching technique in game playing. Explain your answer by taking suitable example. (CO2)	10

6. Answer any one of the following

6.a	Predicate logic system is a powerful tool for knowledge engineering. Explain your answer with examples. (CO3)	10
6.b	Prove that following argument is inconsistent: $(\forall x)\,(P(x) \longrightarrow \neg Q(x))$, $(\forall x)\,(P(x)$ and $(\exists x)\neg Q(x)$. (CO3)	10

7. Answer any one of the following

7.a	Explain the following with examples: (CO4) (i) Training methods (ii) Agents and Environment	10
7.b	Describe the Expert system with proper block diagram. (CO4)	10

8. Answer any <u>one</u> of the following

8.a	Consider the problem: A patient arrives at the doctor's office with symptoms that could have been caused either by dehydration or by the disease D (but not both). There are two possible actions: Drink, which unconditionally cures dehydration, and Medicate, which cures disease D but has an undesirable side effect if taken when the patient is dehydrated. Write the problem description, and diagram a sensor less plan that solves the problem, enumerating all relevant possible worlds. (CO5)	10
8.b	Describe a method for construction Bayesian networks. Explain independence relations in Bayesian networks. (CO5)	10