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**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA**

**(An Autonomous Institute Affiliated to AKTU, Lucknow)**

**B.Tech**

SEM:VI CARRY OVER THEORY EXAMINATION - AUGUST 2023

**Subject: Artificial Intelligence**

**Time: 3 Hours**

**Max. Marks: 100**

**General Instructions:**

**IMP:** Verify that you have received the question paper with the 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-a. A technique that was developed to determine whether a machine could or could not demonstrate the artificial intelligence known as the\_\_ (CO1) 1
- (a) Boolean Algebra
  - (b) Turing Test
  - (c) Logarithm
  - (d) Fuzzy Logic
- 1-b. The characteristics of the computer system capable of thinking, reasoning and learning is known is (CO1) 1
- (a) Machine Intelligence
  - (b) Human Intelligence
  - (c) Artificial Intelligence
  - (d) Virtual Intelligence
- 1-c. Which search method will expand the node that is closest to the goal? (CO2) 1
- (a) Best-first search

- (b) Greedy best-first search  
(c) A\* search  
(d) None of the mentioned
- 1-d. LIFO is \_\_\_\_\_ Data structure. (CO2) 1  
(a) Stack  
(b) Queue  
(c) Priority Queue, Stack  
(d) Priority Stack
- 1-e. Which of the following option is used to build complex sentences in knowledge representation? (CO3) 1  
(a) Logical Symbols  
(b) Logical Connectives  
(c) Quantifier  
(d) Proposition
- 1-f. The statement comprising the limitations of FOL is/are \_\_\_\_\_ (CO3) 1  
(a) Formalizing Natural Languages  
(b) Expressiveness  
(c) Many-sorted Logic  
(d) All of the above
- 1-g. The values of the set membership is represented by \_\_\_\_\_ (CO4) 1  
(a) Discrete Set  
(b) Probabilities  
(c) Degree of truth  
(d) Analog set
- 1-h. How many types of rules are there in rule based system? (CO4) 1  
(a) 2  
(b) 3  
(c) 4  
(d) 5
- 1-i. Which of the following is not the component of partial order planning? (CO5) 1  
(a) Bindings  
(b) Goal  
(c) Causal Links

(d) Learning

- 1-j. What are the two major aspects which combines AI Planning problem? (CO5) 1
- (a) Search & Logic
  - (b) Logic & Knowledge Based Systems
  - (c) FOL & Logic
  - (d) Knowledge Based Systems

**2. Attempt all parts:-**

- 2.a. Give some advantages and disadvantages of Artificial Intelligence?(CO1) 2
- 2.b. Define advantages of Uniform Cost Search. (CO2) 2
- 2.c. How is AI related to Knowledge? (CO3) 2
- 2.d. Differentiate between Certain & Uncertain Knowledge. (CO4) 2
- 2.e. What are the applications of Machine learning in daily life?(CO5) 2

**SECTION B**

**30**

**3. Answer any five of the following:-**

- 3-a. Explain the structure of Intelligent agent with diagram. (CO1) 6
- 3-b. Give a brief introduction to the Turing test in AI? (CO1) 6
- 3-c. Explain Simple Hill climbing in detail. (CO2) 6
- 3-d. Differentiate between Informed & Uninformed search. Give examples. (CO2) 6
- 3.e. Explain Production rule in Water Jug problem. (CO3) 6
- 3.f. Discuss frame based systems. (CO4) 6
- 3.g. What is reinforcement learning examples? (CO5) 6

**SECTION C**

**50**

**4. Answer any one of the following:-**

- 4-a. How Artificial intelligence, Machine Learning, and Deep Learning differ from each other? (CO1) 10
- 4-b. Explain the model of PEAS for self-driving cars with diagram. (CO1) 10

**5. Answer any one of the following:-**

- 5-a. How BFS is different from DFS? Explain with suitable example. (CO2) 10
- 5-b. What is Mini-Max Algorithm in AI? Explain the working of Minimax Algorithm. (CO2) 10

**6. Answer any one of the following:-**

- 6-a. Convert the following sentences to wff in first order predicate logic. a. Any 10

teacher is better than a lawyer, b. No coat is water proof unless it has been specially treated. (CO3)

6-b. Define the term knowledge. Explain various techniques of knowledge representation. (CO3) 10

**7. Answer any one of the following:-**

7-a. Draw block diagram that represents the working of an expert system. (CO4) 10

7-b. What do you mean by semantic nets? How it is different from Partitioned Nets? (CO4) 10

**8. Answer any one of the following:-**

8-a. Differentiate between Supervised & Unsupervised Learning (CO5) 10

8-b. What do you mean by a well -posed learning system? Explain the important features that are required for a well - defined learning problem. (CO5) 10

2022-23 Jan - June