Printed page: 02 **Subject Code: AMTCSE0102**

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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

MASTER OF TECHNOLOGY (M. Tech)

(SEM: First Theory Examination (2020-2021)

SUBJECT NAME: ARTIFICIAL INTELLIGENCE

Time: 3 Hours **Max. Marks:70**

General Instructions:

- All questions are compulsory. Answers should be brief and to the point.
- This Question paper consists of 02 pages & 8 questions.
- It comprises of three Sections, A, B, and C. You are to attempt all the sections.
- Section A -Question No- 1 is objective type questions carrying 1 mark each, Question No- 2 is very short answer type carrying 2 mark each. You are expected to answer them as directed.
- Section B - Question No-3 is Long answer type -I question with external choice carrying 4 marks each. You need to attempt any five out of seven questions given.
- Section C - Question No. 4-8 are Long answer type –II (within unit choice) question carrying 7 marks each. You need to attempt any one part *a* or *b.*
- Students are instructed to cross the blank sheets before handing over the answer sheet to the invigilator.
- No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION – A

1.	**Answer all the parts-**		**[5x1=5]**	**CO**
	a.	Can expert systems make mistakes? Justify	**(1)**	**CO4**
	b.	What are evolutionary algorithms?	**(1)**	**CO5**
	c.	Give example of first order predicate logic.	**(1)**	**CO2**
	d.	List the different types of Learning	**(1)**	**CO1**
	e.	Write any five tools name used for AI applications.	**(1)**	**CO3**
2.	**Answer all the parts-**		**[5×2=10]**	**CO**
	a.	Differentiate between python and other programming language.	**(2)**	**CO3**
	b.	Define term Virtual agents with suitable example.	**(2)**	**CO1**
	c.	What is Uninformed search?	**(2)**	**CO2**
	d.	What is iterative deepening? Give some of its advantages	**(2)**	**CO5**
	e.	Explain the concept of Decision Tree	**(2)**	**CO4**

SECTION – B

3.	**Answer any five of the following-**		**[5x4=20]**	**CO**
	a.	What is Hill climbing? Write and explain any one Hill climbing algorithm.	**(4)**	**CO2**
	b.	What is logic in AI? Elaborate the types with suitable example. What are the components of FOPL?	**(4)**	**CO1**
	c.	Explain ant colony optimization algorithm.	**(4)**	**CO5**
	d.	Describe with the comparison between OPEN CV and OPEN VINO.	**(4)**	**CO3**
	e.	Describe Forward and backward chaining inference process? Give suitable example.	**(4)**	**CO4**

f.	Discuss Bayesian network with suitable example	**(4)**	**CO2**
g.	Draw the semantic networks of 1. Tom is a cat. 2. Tom is grey in color 3. Tom is owned by Sam. 4. Cat is mammal	**(4)**	**CO4**

SECTION – C

4	**Answer any <u>one</u> of the following-**	**[5×7=35]**	**CO**
a.	Discuss the Alpha –Beta pruning search algorithm with suitable example.	**(7)**	**CO2**
	OR		
b.	(i) Give a brief introduction to Chatbot. (ii)Write and explain Means Ends Analysis algorithm.	**(7)**	**CO3** **CO2**
5.	**Answer any <u>one</u> of the following-**		
a.	What is knowledge? Write the different approaches for knowledge representation.	**(7)**	**CO4**
	OR		
b.	Discuss Hidden Markov Models with suitable example.	**(7)**	**CO2**
6.	**Answer any <u>one</u> of the following-**		
a.	Discuss Reinforcement learning with suitable example. Give a comparison with advantages and disadvantages of Reinforcement learning with Supervised learning	**(7)**	**CO2**
	OR		
b.	Give State space representation for 8-puzzle Problem. What are possible Heuristic functions for it?	**(7)**	**CO2**
7.	**Answer any <u>one</u> of the following-**		
a.	What are the steps involved in natural language processing (NLP) of an English sentence? Explain with an example sentence.	**(7)**	**CO1**
	OR		
b.	(i)Draw and Discuss the expert system architecture with suitable example. **(ii)** What are the various applications of Artificial Intelligence?	**(7)**	**CO4** **CO1**
8.	**Answer any <u>one</u> of the following-**		
a.	Write the water jug problem. What are the different production rules for water jug problem and also give one solution?	**(7)**	**CO3**
	OR		
b.	Justify the swarm intelligence evolutionary algorithm.	**(7)**	**CO5**