GNITS-R- 18 –117DN

G. Narayanamma Institute of Technology & Science

(**Autonomous**) ***(for Women)***

Shaikpet, Hyderabad- 500 104

IV-B.Tech I-Semester *Regular/Supplementary Examinations, Nov-Dec* - 2023

ARTIFICIAL INTELLIGENCE

(*Electronics and Communication Engineering*)

Max. Marks: 70 **Time: 03 Hours**

Note:

1. Question paper comprises of **Part A** and **Part B**.
2. **Part A** is compulsory which carries 10 marks. Answer all questions in Part A.
3. **Part B** (for 60 marks) consists of **five questions** with **"either" "or"** pattern. Each question carries 12 marks and may have a,b,c as sub questions. The student has to answer any one full question.

PART-A

*(Answer 05 questions. Each question carries **2 marks**)*

Q.No.	Question	Marks	CO	B L
Q.1	a) Give a brief note on Intelligent Systems.	[02]	CO1	[L1]
	b) Define predicate logic. Give example.	[02]	CO2	[L2]
	c) What are the applications of expert systems?	[02]	CO3	[L3]
	d) State Baye's rule.	[02]	CO4	[L2]
	e) Write the significance of parsing in natural language processing.	[02]	CO6	[L2]

END OF PART A

PART-B

*(Answer **05** full questions. Each question carries **12 marks**)*

Q.No.	Question	Marks	CO	B L
Q.2(a)	Give an overview of different kinds of agent programs.	[06]	CO1	[L1]
(b)	Write a short note on model based reflex agents and utility based agent with relevant diagrams.	[06]	CO1	[L4]
	OR			
Q.3(a)	Explain A* algorithm. What are the conditions for optimality.	[06]	CO1	[L3]
(b)	Explain hill-climbing algorithm with an example. List two problems associated with hill-climbing algorithm.	[06]	CO1	[L3]

Q.4(a)	Describe how Alpha-Beta search works with relevant examples.	[06]	CO2	[L4]
(b)	Write about the constraint satisfaction in game playing, create a suitable example.	[06]	CO2	[L6]
	OR			
Q.5(a)	Determine whether the following is Satisfiable, Contradictory or Valid: (P V Q) ^ ~ (P V Q).	[06]	CO2	[L3]
(b)	Define syntactic relation of first order logic. Explain use of first order logic to represent knowledge with example.	[06]	CO2	[L1]

Q.6(a)	List and explain the various approaches of knowledge representation with example.	**[06]**	**CO3**	**[L4]**
(b)	What are the properties of a good system for the knowledge representation? Discuss.	**[06]**	**CO3**	**[L3]**
	OR			
Q.7(a)	List and explain various capabilities of the Expert System.	**[06]**	**CO3**	**[L4]**
(b)	Describe in detail various phases in building Expert systems.	**[06]**	**CO3**	**[L3]**

Q.8(a)	State three properties of Clustering algorithm. Mention three clustering algorithms and explain Fuzzy C-means clustering with relevant equations.	**[06]**	**CO4**	**[L2]**
(b)	Explain about Bayesian Belief Networks with continuous variables and example problem.	**[06]**	**CO4**	**[L5]**
	OR			
Q.9(a)	What is Decision tree? Explain steps to construct to Decision tree.	**[06]**	**CO4**	**[L2]**
(b)	Explain the issues in decision tree learning.	**[06]**	**CO4**	**[L2]**

Q.10(a)	Infer Single-Layer Feed-Forward Networks with a neat sketch. Design XOR function using Multilayer Perceptron Network.	**[06]**	**CO5**	**[L5]**
(b)	List and explain the five design issues of Artificial Neural Networks.	**[06]**	**CO5**	**[L3]**
	OR			
Q.11(a)	Discuss the steps involved in natural language processing with an example.	**[06]**	**CO6**	**[L3]**
(b)	Elaborate on semantic web.	**[06]**	**CO5**	**[L6]**

END OF PART B

END OF THE QUESTION PAPER