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VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN  
 [AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]  
 Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

**Question Paper Code: 60031**

M.E. / M.Tech. DEGREE END-SEMESTER EXAMINATIONS – FEB. 2025

First Semester

Information Technology

P23IT103 – INTRODUCTION TO INTELLIGENT SYSTEMS

(Regulation 2023)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

**PART – A**

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	What are the important parts of human mind? Explain them.	2	K1	CO1
2.	What are the roles of the activation function in a Recurrent Neural Network (RNN)?	2	K1	CO1
3.	Compare the difference between fuzzy logic and traditional binary logic.	2	K2	CO2
4.	Infer the role of membership functions in fuzzy logic.	2	K2	CO2
5.	Construct the breadth-first search and depth-first search with an example each.	2	K3	CO3
6.	Identify how stochastic annealing and genetic algorithm differ from traditional search methods.	2	K3	CO3
7.	Explain the basic difference between structured and unstructured knowledge representations.	2	K2	CO4
8.	Outline the role of semantic networks in knowledge representations.	2	K2	CO4
9.	Discover that Dempster-Shafer Theory of Evidential reasoning handle uncertainty and imprecision.	2	K4	CO5
10.	Examine the role of evolutionary algorithms in machine learning.	2	K4	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11.	a) Explain the architecture of a Backpropagation network. What is the role of hidden layers and the error calculation process? (OR)	13	K2	CO1
	b) Explain the concept of vanishing gradients in Recurrent Neural Network (RNN) and how it affects the performance. Support your answer with an example.	13	K2	CO1
12.	a) Outline the concept of inference in knowledge representation. Explain forward and backward chaining with suitable examples. (OR)	13	K2	CO2
	b) Interpret the architecture of a fuzzy neural network, including the role of fuzzy logic and neural networks. How to fuzzy neural networks used in decision-making system?	13	K2	CO2
13.	a) Interview the concept of heuristic search, including best-first search and hill climbing search with an illustrative example each. (OR)	13	K3	CO3
	b) Plan the process of iterative deepening search, including the role of depth limits and iterative deepening. Explain how it is used in planning and scheduling?	13	K3	CO3
14.	a) Illustrate the architecture of a knowledge-based system, including the role of knowledge base, inference engine, and user interface. Explain how it is used in decision-making? (OR)	13	K2	CO4
	b) Compare the role of formal logic in knowledge representation, including propositional and predicate logic.	13	K2	CO4
15.	a) Discover the concept of statistical learning, including supervised and unsupervised learning with suitable examples. (OR)	13	K4	CO5
	b) Analyze the role of induction learning in machine learning, including the use of decision trees and rule-based systems.	13	K4	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.	Questions	Marks	KL	CO
16. a)	Suggest two applications appropriate for solution using the blackboard architecture. And Briefly characterize the organization of the blackboard and knowledge sources for each implementation.	15	K3	CO4

(OR)

b)	Using the back-propagation network, find the new weights for the net shown below. It is presented with the input pattern [0,1] and the target output 1. Use a learning rate of 0.25 and binary sigmoidal activation function.	15	K5	CO1
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