VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD
B.E. (IT: CBCS) VI-Semester Main Examinations, May-2019
Artificial Intelligence
(Elective-I)

Time: **3** hours

Max. Marks: **70**

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** from **Part-B***

Q.No.	Stem of the question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	Discuss various applications of artificial intelligence in real life?	2	2	1	1
2.	List various exhaustive search techniques used in problem solving?	2	1	1	1
3.	Justify the need for bounded look-ahead strategy in game playing?	2	5	2	2
4.	Explain Resolution refutation technique in Propositional logic?	2	2	1	1
5.	Outline how iterative technique is implemented in PROLOG?	2	2	1	1
6.	Describe briefly various approaches to knowledge representation?	2	1	4	1
7.	Justify Bayesian belief networks reduce the computational effort in representing the joint distribution of multiple events?	2	4	5	2
8.	State the formula for measuring uncertainty using CF theory?	2	2	5	1
9.	Explain Sigmoid Activation function use in ANN?	2	2	2	1
10.	List various design issues associated with Artificial neural networks?	2	1	2	1
	Part-B (5 × 10 = 50 Marks)				
11.a)	Summarize various heuristic search techniques used in problems solving?	6	2	1	1
b)	Design Constraint satisfaction formulation for N-Queens's problem?	4	4	2	2
12. a)	Compare Semantic Tableau system and Resolution refutation logic in propositional logic?	5	3	3	2
b)	Translate $\forall Y ((\forall X \, p \, (X, Y)) \rightarrow \exists Z \, q \, (X, Z))$ to Skolemization?	5	2	3	2
13. a)	Illustrate control strategy of the Prolog logic programing?	4	2	1	1
b)	Draw extending semantic network for the following: "Teachers who work hard are liked by students. Mary is a hard-working teacher. John is a student. Conclude that John likes Mary."	6	3	4	2
14. a)	Explain architecture and phases involved in building the expert systems?	5	2	4	1
b)	Draw and solve the joint distribution represented by the Bayesian belief network for the following? There are 3 events represented by binary random variables named A, B and C. B depends only on A and C depends only on B. $P(A)= 0.4$, $P(B \mid A) = 0.2$; $P(B \mid A') = 0.15$, $P(C \mid B) = 0.5$ and $P(C \mid B')=0.4$.	5	3	5	2

			M	L	CO	PO
15.	a)	Compare Single and Multi-layer neural networks with RBF networks?	5	4	2	2
	b)	Produce weights for Hopfield recurrent network for the following input data? X1={1, -1, -1,1}; X2={1, 1, -1, 1}; X3={-1, 1,1,-1}.	5	3	2	2
16.	a)	Briefly explain how the problem characteristics influence problem solving techniques?	5	1	1	1
	b)	Illustrate Alpha-Beta pruning algorithm for game playing?	5	2	2	1
17.		Answer any *two* of the following:				
	a)	Describe how Dempster-Shafer theory helps in measuring uncertainty?	5	1	4	1
	b)	Write PROLOG program for computing gcd of two numbers?	5	2	2	1
	c)	Analyze how Multi-layer feed forward network rectifies the non-linear separation limitation of Perceptron in input data?	5	3	2	2

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	59
2	Knowledge on application and analysis (Level-3 & 4)	38.9
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	2.1

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