CSE02/CSPE16

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RAMAIAH
Institute of Technology

(Autonomous Institute, Affiliated to VTU)
(Approved by AICTE, New Delhi & Govt. of Karnataka)
Accredited by NBA & NAAC with 'A' Grade

SEMESTER END EXAMINATIONS – JANUARY 2019

Course & Branch	:	**B.E : Computer Science and Engineering**	**Semester**	:	**V**
Subject	:	**Artificial Intelligence**	**Max. Marks**	:	**100**
Subject Code	:	**CSE02/CSPE16**	**Duration**	:	**3 Hrs**

Instructions to the Candidates:

- Answer one full question from each unit.
- Use suitable examples and diagrams wherever necessary to support your answer.

UNIT- I

1.	a)	Explain PEAS and write the PEAS description for: i) Railway Reservation System ii) Interactive tutor for aptitude skills.	CO1	(10)
	b)	Compare DFS and Iterative deepening DFS and explain Iterative deepening DFS with an example.	CO1	(10)
2.	a)	Give the initial state, goal test, operators and path cost function for the 8 puzzle problem. Also write the state space diagram.	CO1	(10)
	b)	Explain A* search algorithm with an example.	CO1	(10)

UNIT– II

3.	a)	Illustrate the procedure of converting any given sentence into Conjunctive Normal form (in propositional Logic). Also write the simple resolution algorithm for propositional logic and explain the concept of proof by refutation process.	CO2	(10)
	b)	Represent the following sentences in first-order logic, using a consistent vocabulary: i) A person born in the UK, each of whose parents are a UK citizen or a UK resident, is a UK citizen by birth. ii) Only one student took AI in spring 2017. iii) No person buys an expensive policy. iv) There is an agent who sells policies only to people who are not insured. v) For every number that exists, there exists a number such that x<y.	CO2	(10)
4.	a)	Define the terms Equivalence, Validity and satisfiablity as applied to propositional logic. Give suitable example in each case.	CO2	(08)
	b)	Write the basic forward chaining algorithm. Apply it to the following, to prove that West is a criminal. The law says that it is a crime for an American to sell weapons to hostile nations. The country Nono, an enemy of America, has some missiles, and all of its missiles were sold to it by Colonel West, who is American.	CO2	(12)

UNIT- III

5.	a)	Describe the differences and similarities between problem solving and planning. Use suitable example to support your answer.	CO3	(08)
	b)	State the difference in supervised, unsupervised and reinforcement learning methods using suitable examples.	CO3	(12)

6.	a)	Write the GRAPHPLAN Algorithm and explain how it works. Formulate the Planning graph for the spare tire problem.	CO3	(12)
	b)	Why do we need to consider uncertainty while dealing with real world knowledge base? Justify that probability theory handles uncertainty better than FOL.	CO3	(08)

UNIT- IV

7.	a)	Compare the working strategy and the efficiency of PageRank and the Hyperlink-Induced Topic search Algorithm (HITS) for information retrieval. Use suitable examples to support you answer.	CO4	(12)
	b)	Briefly describe the four classes of grammatical formalisms as described by Chomsky [1957].	CO4	(08)
8.	a)	What is syntactic analysis (parsing) in NLP. Write the CYK algorithm for parsing and explain it briefly.	CO4	(10)
	b)	What is the significance of N-gram models in NLP? Why is the task of feature selection and preprocessing of data necessary in the process?	CO4	(10)

UNIT- V

9.	a)	Give an example of combinatorial problem. What is most difficult in solving these problems?	CO5	(04)
	b)	Formulate any two tasks of computing which would be possibly solved by applying the philosophy of biological ants and explain the same.	CO5	(08)
	c)	Compare the advantages of using genetic algorithm approach over artificial Neural Networks to solve the network topology selection problem and finding the optimal set of weights problem.	CO5	(08)
10.	a)	Discuss in detail the subsumption and the pipeline robot architectures. Also sate one application area where each of them would be suitable.	CO5	(12)
	b)	Justify the importance of genetic Algorithms (GA) to the world of Artificial Intelligence. Elaborate on the application of GA on optimization problem of Job-shop scheduling.	CO5	(08)

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