CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY

Fifth Semester of B. Tech. Examination (CE) / Seventh Semester of B. Tech. Examination (CE)
November-2017
CE316 Artificial Intelligence (A.I.) (Elective-I)/
CE407 Artificial Intelligence (A.I.)   (Elective-II)

Date: 30.11.2017, Thursday   Time: 10:00 a.m. To 01:00 p.m.   Maximum Marks: 70

Instructions:
1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Rough work is to be done in the last page of main supplementary, please don't write anything on the question paper.
5. Indicate clearly, the option(s) you attempt along with its respective question no.
6. Figures to the right indicate marks.

SECTION-I

Q-1 Answer the following questions.
a) What are the disadvantages of Hill Climbing Search Technique? Mention the possible solution(s) for each problem. **3**
b) Give advantages and disadvantages of Artificial Neural Networks. **3**
c) Explain Procedural knowledge and Declarative knowledge with an example. **3**
d) Which search is equal to minimax search but eliminates the branches that can't influence the final decision? How? **2**

Q-2
[A] Write a PROLOG program to find Nth element in the list. **4**
[B] Explain the characteristic features of Expert System. **4**
[C] Describe in brief various steps involved in *NLP*. **4**

OR

Q-2
[A] State and prove Bay's Theorem. Justify the use of Bay's theorem in Bayesian Network. **4**
[B] Explain architecture of an expert system. Give two names of well-known expert systems. **4**
[C] Explain rules to perform various Arithmetic Operations in Prolog program. **4**

Q-3
[A] Compare Fuzzy logic with Binary logic. Justify the use of *fuzzy logic* in AI. What are the criticisms for *fuzzy logic*? **4**
[B] What is an Expert System? Which are the types of users involved with Expert System? Explain in brief. **4**
[C] Where is the knowledge in Neural Network stored? Explain working of multilayer fully connected feed forward networks. **4**

OR

Q-3
[A] Explain CUT and fail predicate in Prolog with example. **4**
[B] Explain *Horn clauses* and execution strategy of PROLOG program. **4**
[C] What is the main drawback of back-propagation network? What is the reason of it? What do you mean by learning rate? Explain how it is affecting learning **4**

process?

SECTION-II

Q-4

    a) What is the Turing test? What is the significance of it? Give   **3** comparisons between human and computer intelligence?

    b) Define following with respect to algorithm performance.   **4**
       1. Admissibility   2. Branching Factor

    c) Discuss how Predicate Logic is powerful than proposition logic?   **4** What are the limitations of proposition logic?

Q-5

[A] A problem solving search can proceed either in forward or backward   **4** direction. Whether search should proceed forward or backward for the following problems. Justify the answer with the reason.
    1. Planning a party.
    2. Going back to home from unknown place.

[B] Explain: A* algorithm   **4**

[C] Write down the *water jug problem*. Give the rules for *water jug problem*.   **4**

OR

Q-5

[A] Differentiate: *Abduction* and *Inheritance*.   **4**

[B] Differentiate: *Forward Reasoning* versus *Backward Reasoning*.   **4**

[C] Which is better when the memory is limited, Breadth First Search or Depth First   **4** Search? Give Reason(s). ?

Q-6

[A] Analyze the following problems with respect to the seven problem   **4** characteristics.
    1. TSP
    2. Missionaries and Cannibals

[B] Write in brief the use of AI to the organizations in improving their knowledge   **4** base.

OR

[B] Trace the execution of the constraint satisfaction procedure in solving the   **4** crypt arithmetic problem: **TWO+TWO=FOUR**

[C] Construct semantic net representations for the following: **4**
    Every dog in the town has bitten the constable.

OR

[C] Draw the parse tree and write down the grammar rules for: **4**
    He drove down the street in the car.