B.Sc.CSc.304-2071 ✡

Tribhuvan University
Institute of Science and Technology
2071
✡

Bachelor Level / Third Year/ Fifth Semester/ Science
Computer Science and Information Technology(CSc.304)
(Artificial Intelligence)

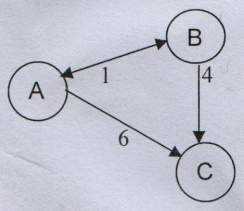
Full Marks: 60
Pass Marks: 24
Time: 3 hours

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.
Attempt all questions.

1. Define with suitable supporting statements and examples, "Artificial Intelligence is the system that act like humans".

2. For each of the following agents, determine what type of agent architecture is most appropriate (i.e., table lookup, simple reflex, goal-based or utility-based).
   a. Medical diagnosis system
   b. Satellite image analysis system
   c. Part-picking robot
   d. Refinery controller

3. Consider the following graph, steps cost is given on the arrow. Assume that the successors of a state are generated in alphabetical order, and that there is no repeated state checking. A is the starting node and C is goal node.



   a. Of the four algorithms breadth-first, depth-first and iterative-deepening, which find a solution in this case?
   b. Write sequence of node expanding by algorithm if finds solution.

4. Define learning. Why learning frame work is required? Explain about learning frame work with block diagram and examples.

5. Briefly describe the approaches of knowledge representation with example.

6. Consider the following sentence:
   [(food =>party) V (drinks => party)] => [(food ^ drinks) => party]
   a. Convert the right hand and left hand sides of main implication into CNF.
   b. Prove the validity of sentence using resolution.

7. Convert the following sentence into predicate logic.
   a. "No dog bites a child of its owner"?
   b. "No two adjacent countries have the same color"?

8. Why disjunctive normal form is required? Explain all the steps with examples.

9. What is the difference between symbolic and non-symbolic AI? Represent the following knowledge in semantic network
   Robin is bird
   Clyde is a Robin
   Clyde owns a nest from spring 2014 to fall 2014

10. Explain the steps of Natural Language Processing.