Tribhuvan University

Institute of Science and Technology

2080

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Bachelor Level / Second Year/ Forth Semester/ Science — Full Marks: 60

Computer Science and Information Technology (CSC 261) — Pass Marks: 24

(Artificial Intelligence) — Time: 3 hours.

(NEW COURSE)

Candidates are required to give their answers in their own words as for as practicable.

All figures in the margin indicate full marks.

Section A

Long Answer Questions.

Attempt any TWO questions. [2×10=20]

1. Define state space graph. Differentiae between A* search and greedy best first search. (4+6]

2. What do you mean by unification and lifting? Convert following sentences into FOPL. [4+6]

   Sushma likes all kinds of practical courses
   AI and DBMS are practical courses.
   Any subject anyone practices is practical course.
   Ruby practices PHP
   Rita practices everything that Ruby practices

   Using resolution check whether "Sushma likes PHP" is inferred or not.

3. Differentiate supervised learning from unsupervised? Discuss How Naïve Bayes Model can be used for machine learning? Support your answer with example. [4+6]

Section-B

Short Answer Questions

Attempt any EIGHT questions. [8×5=40]

4. How can you define AI from the dimension of behavioral process? When a machine is said to pass Turing Test? [2.5+2.5]

5. What is an agent? How utility agent works? Give an example of utility agent. [2+2+1]

6. What is game search? How minimax search is used in game playing? Illustrate with an example. [1+4]

7. What is semantic network? Given following knowledge base, represent it using semantic network. [1+4]

   Subash is a student. All students are person. Person has hair. Ram is a player. All player play game. Game is a physical action. Height of all players is larger than the height of all students. Physical action starts from 7:00 AM and ends at 9:00 AM

8. Discuss how genetic algorithm works? [5]

9. Using your own concepts and construct PEAS framework for following intelligent agents; [2.5+2.5]
   a. Medicine delivery drone
   b. Covid Medicine Prescriber

10. What is machine vision? Describe the components of machine vision. [1+4]

11. How natural language generation differs from natural language understanding? How morphological analysis is done in NLP? [2+3]

12. What is constraint satisfaction problem? Illustrate graph coloring problem as a constraint satisfaction problem. [5]