BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: BE **SEMESTER: V**
BRANCH: CSE **SESSION : MO/2019**

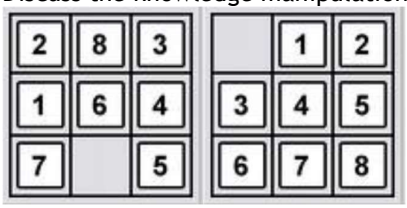
SUBJECT : CS8101 ARTIFICIAL INTELLIGENCE & EXPERT SYSTEMS

TIME: 1.5 HOURS **FULL MARKS: 25**

INSTRUCTIONS:
1. The total marks of the questions are 30.
2. Candidates may attempt for all 30 marks.
3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. The missing data, if any, may be assumed suitably.

Q1 (a) What are the different schemes for representing knowledge? [2]
(b) Differentiate between Inductive, Deductive and Abductive knowledge [3]

Q2 (a) Discuss the knowledge manipulation issues in knowledge-based system. [2]
(b) [3]



Initial state Goal State

For the above 8 puzzle problem the initial state and final state is given. The aim is to generate the goal state from initial state using sliding to legal movements.
The legal moves can be that result from trying the four actions (blank moves Left, Right, Up, or Down). Design proper heuristic function to solve this problem. Also justify your heuristic function with some example movements in the search space to reach the goal state.

Q3 (a) Write the output of the following [2]
(i). (append ´(c) ´(ab))
(ii). (Member ´b ´(a b d))
(iii). (car cdr ´(a (b c) d)
(iv). (evenp 3)
(b) Write a LISP program to check input number is Fibonacci or not. [3]

Q4 (a) What is Mapcar and lambda function? Using proper example show the use of these two functions. [2]
(b) Using property list represent the details of a pen say “Fountain Pen” with different attributes like make by Parker, pen colour white, length, width, ink colour, etc. Also, represent using LISP. [3]

Q5 (a) What is wff? [2]
(b) Consider the following set of facts: [3]
(i) Anyone passing his engineering examination and winning the lottery is happy.
(ii) But anyone who studies or is lucky can pass all his examinations.
(iii) Ram did not study but Ram is lucky
(iv) Anyone who is lucky wins the lottery.
Answer by resolution” Is Ram happy”?

PTO

Q6 (a) Differentiate Clause and Predicate. [2]

(b) Consider the following set of facts: [3]

(i) John likes all kind of foods.

(ii) Apples are food.

(iii) Chicken is food.

(iv) Anything anyone eats and isn't killed by is food.

(v) Bill eats peanuts and still alive.

(vi) Sue eats everything Bill eats.

Prove John like peanuts using backward chaining.

:::::: 24/09/2019 ::::::E