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

CLASS: MCA   SEMESTER : V
BRANCH: MCA   SESSION : MO/19

SUBJECT: MCA7305 ARTIFICIAL INTELLIGENCE

TIME: 3 HOURS   FULL MARKS: 60

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
4. **Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)   What is an agent? Describe briefly how an agent should act in a computer program.   [6]
Q.1(b)   Consider the following problem: [6]
You are given two jugs, a 4-gallon one and a 3-gallon one, a pump which has unlimited water which
you can use to fill the jug, and the ground on which water may be poured. Neither jug has any
measuring markings on it. How can you get exactly 2 gallons of water in the 4-gallon jug?
Solve the problem clearly mention the state space and solution methodology.

Q.2(a)   What is uniformed search ? List various methods of uniformed search and describe any one of them.   [6]
Q.2(b)   Explain Hill climbing algorithm also discuss problems of Hill Climbing algorithm.   [6]

Q.3(a)   With suitable example describe MinMax search procedure.   [6]
Q.3(b)   What is A* algorithm ? Explain how it is different from AO* algorithm.   [6]

Q.4(a)   Briefly explain Simulated annealing search   [6]
Q.4(b)   Write short notes on the followings   [6]
      (a) Non Monotonic Reasoning
      (b) Heuristic Reasoning

Q.5(a)   Represent the following sentences in Predicate Logic: [6]
    1. Marcus was a man.
    2. Macus was a Pompeian.
    3. All Pompians were Romans.
    4. Caesar was a ruler.
    5. All Romans were either loyal to Caesar or hated him.
    6. Everyone is loyal to someone.
    7. People only try to assassinate rulers they are not loyal to.
    8. Marcus tried to assassinate Caesar.
Q.5(b)   Using resolution answer the query   [6]
is Marcus alive now.
Was Marcus loyal to Caesar.

Q.6(a)   What is Natural Language Processing discuss the problems of NLP   [6]
Q.6(b)   Explain what is probabilistic reasoning?   [6]

Q.7(a)   What do you mean by machine learning. Explain the concept of learning with respect to genetic   [6]
algorithm.
Q.7(b)   Briefly describe the components of an expert system with block diagram.   [6]