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(July)

COMPUTER APPLICATION

(Honours)

(Artificial Intelligence)

[BCA-602 (a)]

Marks : 75

Time : 3 hours

The figures in the margin indicate full marks
for the questions

Answer **one** question from each Unit

UNIT—I

1. (a) Define artificial intelligence. List some of the applications of AI. 3+2=5
- (b) What is state space? State the requirements of search process in a state space. 4+6=10

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(Turn Over)

2. (a) Discuss the state space representation for water jug problem. 10
- (b) Discuss the differences between breath-first search and depth-first search. 5

UNIT—II

3. (a) What is heuristic search? What do you mean by heuristic function? Find the heuristic function of the following 8-puzzle game : 3+3+4=10

Initial State		
7	2	4
5	—	6
8	3	1

Final State		
—	1	2
3	4	5
6	7	8

- (b) Discuss A algorithm with the help of an example. What is the difference between A and AO algorithms? 6+4=10
4. (a) Write an algorithm for best-first search. How does it combine the advantages of BFS and DFS? 6+4=10
- (b) Discuss minmax algorithm with the help of an example. 10

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(Continued)

(3)

UNIT—III

5. (a) Discuss four different approaches to knowledge representation in artificial intelligence. 10
- (b) Convert the following facts into first-order predicate logic : 10
- (i) Ravi likes all kinds of food.
 - (ii) Apple and chicken are foods.
 - (iii) Anything anyone eats and not killed is food.
 - (iv) Ajoy eats peanuts and still alive.
 - (v) Rita eats that Ajoy eats.
6. (a) What is resolution? Discuss the steps to convert first-order predicate logic (FOL) to conjunctive normal form (CNF) with the help of an example. 10
- (b) Define forward and backward reasoning. Discuss the key differences. 10

UNIT—IV

7. Discuss expert system architecture with a block diagram. 10
8. Why does machine need learning? Discuss three different types of learning in AI. 4+6=10

(4)

UNIT—V

9. What is natural language processing? Discuss the different steps involved in the process. What are the major applications of NLP? 3+4+3=10
10. What do you understand by morphological analysis? Discuss *n*-gram algorithm for morphological analysis. 5+5=10
