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Roll No.

Total No. of Pages : 02

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BCA (Sem.-6)

## ARTIFICIAL INTELLIGENCE

Subject Code : UGCA-1945 M.Code : 91689

Date of Examination : 02-07-22

Time : 3 Hrs.

Max. Marks : 60

### INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SIX questions carrying TEN marks each and students have to attempt any FOUR questions.

### SECTION-A

1. Write briefly :
  - a. Define intelligence. What is the intelligent behaviour of a machine? Discuss various levels of artificial intelligence.
  - b. Discuss the history of artificial intelligence briefly.
  - c. What is Bayesian reasoning? How does an expert system rank potentially true hypotheses? Give an example.
  - d. What are a fuzzy set and a Membership function? What is the difference between a crisp set and a fuzzy set? Determine possible fuzzy sets on the universe of discourse for man weights.
  - e. Write down the steps of breadth first search. Illustrate with example.
  - f. Explain the process of memory bounded heuristic search.
  - g. Discuss the advantages of using context-free grammars in design of practical natural language parsers.

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- h. Give a heuristic that a block-stacking program might use to solve problems of the form “stack block X on block Y”.
- i. What is an expert system shell? What are the fundamental characteristics of an expert system?
- j. What is pattern recognition? Discuss its applications.

#### SECTION–B

- 2. What are the different approaches in defining artificial intelligence? What characteristics must a problem possess to be solved using artificial intelligence? Write a description of 8-queens problem.
- 3. Discuss the syntax and semantics of propositional logic. List the rules of inference for propositional logic. Consider the following facts and construct a step-by-step proof by resolution of the statement “John likes peanuts”.
  - a. John likes all kinds of food.
  - b. Apple and vegetable are foods.
  - c. Anything anyone eats and is not killed by is food.
  - d. Anil eats peanuts and is still alive.
  - e. Harry eats everything that Anil eats.
- 4. How are objects related in frame-based systems? What are the ‘a-kind-of’ and ‘a-part-of’ relationships? Give examples.
- 5. Differentiate between informed search and uninformed search. Explain depth first search technique with example. Discuss the performance of this technique.
- 6. Explain the architecture of an expert system. What are rule based system architecture and non production system architecture?
- 7. Write about the various tasks in natural language processing in detail. What are the main difficulties in natural language understanding?

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

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