

**END TERM EXAMINATION****SIXTH SEMESTER [BCA] SEPTEMBER-OCTOBER 2020****Paper Code: BCA-312****Subject: Artificial Intelligence****(Batch 2011 Onwards)****Time: 2 Hours****Maximum Marks: 75****Note: Attempt any three questions including Q.no1 which is compulsory.  
Internal choice is indicated.**

- Q1** Answer the following questions: (5x5=25)
- Differentiate between Depth First Search and Breadth first Search Techniques.
  - What do you mean by Production System?
  - What are the properties of an efficient Knowledge Representation system?
  - What is Constraint Satisfaction?
  - What is Turing Test?

**UNIT-I**

- Q2**
- What do you mean by Artificial Intelligence? How you define problem as a state space search? Explain using water jug problem. (20)
  - Write short note on Inferential Knowledge. (5)

**OR**

- Q3**
- Trace the constraint satisfaction procedure solving the following cryptarithmic problem. (20)

**CROSS****+Roads****DANGER**

Properly write all the steps.

- What is Semantic Grammar? Give example. (5)

**UNIT-II**

- Q4**
- Explain various issues in knowledge representation. (8)
  - Illustrate the use of first order logic to represent knowledge for following facts and use resolution to answer the question "What course would Ram like?" (8)
    - Ram likes only easy courses.
    - Engineering Courses are hard.
    - All courses in Arts are easy.
    - AR04 is an Arts course.
  - What is an Expert System Shell? Describe in brief the various components of Expert System. (9)

**OR**

- Q5**
- Explain with examples the use of "instance" and "is a" attributes. (8)
  - What do you understand by a frame? How it is useful in knowledge representation. (8)
  - Differentiate between top down and bottom up parsing with example. (9)

**UNIT-III**

- Q6** Write short notes on: (5x5=25)
- Learning by Parameter Adjustment
  - Learning by Macro Operators
  - Learning by chunking
  - How machine learning can be used in chunking? Give Example.
  - Define Logical Programming in Prolog.

**OR**

- Q7 a) What do you understand by Natural Language Processing? (8)  
b) Discuss in details the various steps involved in Natural Language understanding. (8)  
c) What is the role of Expert System tools in developing expert systems? Give one example of such a tool and its availability. (9)

#### UNIT-IV

- Q8 a) Write a program in LISP to find average of four numbers. (8)  
b) Write a program in any AI Programming Language to find area of square. (8)  
c) Differentiate between LISP and PROLOG (9)

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