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Roll No. : 300211322011

**C109511(022)**

**B. Tech. (Fifth Semester) Examination,  
Nov.-Dec. 2024**

**(Computer Science and Engg. Branch)**

**ARTIFICIAL INTELLIGENCE**

**Time Allowed : Three hours**

**Maximum Marks : 100**

**Minimum Pass Marks : 35**

**Note :** Attempt all questions. Part (a) of each question is compulsory and carries 4 marks each. Attempt any two parts from (b), (c) and (d) and carries 8 marks each.

**Unit-I**

1. (a) List the characteristics of an Intelligent Agent. 4
- (b) Explain the evolution of Artificial Intelligence with its advantages. 8

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- (c) Give the list of application areas of Artificial Intelligence. 8
- (d) What do you mean by Intelligent Agent? Explain different types of Intelligent Agent. 8

## Unit-II

2. (a) Define Heuristic function. 4
- (b) Explain Search in Artificial Intelligence. Write difference between informed and uninformed search with example. 8
- (c) Illustrate the concept of constraint-satisfaction AI technique to solve the following crypt arithmetic problem : 8

CROSS + ROADS = DANGER

- (d) Explain Hill climbing search with an example. What are the problems associated with Hill climbing search? What are the remedies for these problems? 8

## Unit-III

3. (a) What do you understand by well-formed formula? 4

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- (b) What is propositional logic and how knowledge is represented using propositional logic? 8
- (c) Convert the following set of sentences : 8
- (i) Marcus was a man.
  - (ii) Marcus was a Pompeian.
  - (iii) All Pompeian were Romans.
  - (iv) Caesar was a ruler.
  - (v) All Romans were either loyal to Caesar or hated him.
  - (vi) Everyone is loyal to someone.
  - (vii) People only try to assassinate rulers they are not loyal to.
  - (viii) Marcus tried to assassinate Caesar.

Translate the above sentences in wff and answer using Resolution: "Did Marcus hate Caesar?"

- (d) Explain the properties of a statement and also explain the equivalence laws for the statements. 8

#### Unit-IV

4. (a) What is Knowledge agent? 4

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- (b) What are the properties of a knowledge representation system? Discuss various knowledge representation techniques. 8
- (c) Discuss conceptual dependency and explain how information can be represented using conceptual dependency. 8
- (d) What are semantic networks and its classification? 8

### Unit-V

5. (a) Explain about components of planning systems. 4
- (b) What do you understand by planning? Explain about totally-ordered and partially-ordered planning. 8
- (c) Explain various approaches of planning. 8
- (d) Explain block world problem with suitable example. 8