



R20 Regulation

Subject code: 3E5EF

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

B.Tech V Semester Regular Examinations, January 2023

ARTIFICIAL INTELLIGENCE

(Professional Elective)

(Computer Science & Engineering)

Maximum Marks: 70

Date: 20.01.2023 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 Discuss the applications of Artificial Intelligence.
- 2 Write the advantages of depth first search.
- 3 Explain isa relationship.
- 4 Represent the given facts as well-formed formulae in predicate logic
 - Marcus was a man.
 - Marcus was a Pompeian.
 - All Pompeians were Romans.
 - Caesar was a ruler.
- 5 What do certainty factors mean?
- 6 What is LTMS?
- 7 What are the goals of CYC?
- 8 What is a script?
- 9 List the components of planning system.
- 10 Explain the difference between Minimax search and Alpha-Beta pruning.

Part-B

Answer All the following questions.

(10MX 5=50Marks)

- 11 A. Explain various characteristics of Artificial Intelligence and outline the properties of intelligence. (5M)
B. Explain Hill Climbing algorithm with 8 – puzzle problem. (5M)

OR

- 12 Solve the cryptarithmic puzzle. (10M)

R O A D S

C R O S S

D A N G E R

- 13 A. Show that $(C \vee D)$ is a logical consequence of $S = \{A \vee B, \sim A \vee D, C \vee \sim B\}$. (5M)
B. Prove the following theorem using deductive inference rules from
 $A \rightarrow B \wedge C$, A infer C, from $A \wedge B$, $A \rightarrow C$ infer C. (5M)

OR

- 14 Consider the following sentences (10M)
- John likes all kinds of food
 - Apples are food
 - Chicken is food
 - Anything anyone eats and isn't killed by is food
 - Bill eats peanuts and is still alive
 - Sue eats everything Bill eats
- a) Prove that John likes peanuts using backward chaining.
b) Prove that John likes peanuts using resolution.
- 15 Consider a problem that the given probability of any person chosen at random being literate as 0.40 and probability of any person chosen at random having age > 60 years as 0.005. Find the probability of the fact that a person chosen at random of age > 60 years is literate. (10M)
- OR
- 16 Give two examples of non – monotonic system. Explain about the non – monotonic system and logic. (10M)
- 17 Draw a semantic network to represent the following knowledge (10M)
Every vehicle is a physical object. Every car is a vehicle. Every car has four wheels.
Electrical system is a part of car. Battery is a part of electrical system. Pollution system is a part of every vehicle. Vehicle is used in transportation. Suzuki is a car.
- OR
- 18 A. Construct a network of frame system for hospitals. (5M)
B. Explain any five conceptual primitive actions. (5M)
- 19 Explain the MINIMAX algorithm for Tic – Tac – Toe. (10M)
- OR
- 20 A. Explain in detail how hard problems can be solved using hierarchical planning. (5M)
B. Explain the iterative deepening A* algorithm with an example. (5M)