Code No: 155DY **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, August/September - 2024
ARTIFICIAL INTELLIGENCE
(Common to CE(SE), CSE(CS), CSE(DS))

Time: 3 Hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)	What is bidirectional search?	[2]
b)	Illustrate the general learning agent.	[3]
c)	What is resource constraint?	[2]
d)	Explain constraint propagation.	[3]
e)	What is knowledge engineering?	[2]
f)	What is resolution in first-order logic?	[3]
g)	What are temporal constraints?	[2]
h)	Define hierarchical planning.	[3]
i)	What is probability distribution?	[2]
j)	Define the terms inductive learning and deductive learning.	[3]

PART – B

(50 Marks)

2.a) Discuss about model-based reflex agents in detail.
b) Explain the Greedy best-first search in heuristic search strategy. [5+5]

OR

3.a) What is A* search? Discuss the conditions for optimality of A*.
b) Explain the depth-first search on a binary tree in uninformed search strategy. [5+5]

4.a) How is map-coloring problem solved using CSP Technique? Explain
b) Discuss about inference and proofs in propositional theorem proving. [5+5]

OR

5.a) Explain the Job-shop scheduling problem with the help of CSP.
b) Describe the forward-chaining algorithm for propositional logic. [5+5]

6.a) Explain the steps to convert following first-order logic sentence into equivalent CNF sentence "Everyone who loves all animals is loved by someone".

$$\forall x\ [\forall y\ Animal\ (y) \Rightarrow Loves\ (x, y)] \Rightarrow [\exists y\ Loves\ (y, x)]$$

b) Explain the steps used in knowledge engineering process with an example. [5+5]

OR

7.a) Explain the symbols and interpretations used in first-order logic.
b) Discuss about categories in knowledge representation. [5+5]

8.a) Explain the analysis of planning approaches.
b) Discuss about Contingent planning in nondeterministic domains. [5+5]

OR

9.a) Discuss about backward relevant-state space search.
b) Explain the Multi-agent planning. [5+5]

10.a) Explain the Inference by enumeration in Bayesian Networks.
b) Discuss about Explanation-based learning. [5+5]

OR

11.a) Discuss about Dempster-Shafer Theory.
b) What is supervised learning? Explain. [5+5]

---ooOoo---