B. TECH. (COMPUTER SCIENCE & BUSINESS SYSTEMS) (CBCS - 2018 COURSE)

Computer Science & Business Systems

B.Tech. (CSBS) Sem - VI :SUMMER : 2023

SUBJECT : ARTIFICIAL INTELLIGENCE

Day : Friday

Time : 02:30 PM-05:30 PM

Date : 26-05-2023

S-20471-2023

Max. Marks : 60

N.B.

1) All questions are **COMPULSORY**.
2) Figures to the **RIGHT** indicate **FULL** marks.

Q.1 Discuss the tic-tac-toe problem in detail and explain how it can be solved using Intelligent Agent techniques. **(10)**

OR

Q.1 Define agents in Artificial Intelligence. Explain Goal based agents, Utility based agent, Learning agent in Artificial Intelligence. **(10)**

Q.2 What is A* algorithm in Artificial Intelligence? Explain with example. **(10)**

OR

Q.2 Explain Breadth First Search Algorithm. Discuss applications of Breadth First Algorithm. **(10)**

Q.3 Explain Mini-Max Algorithm with example in Artificial Intelligence. **(10)**

OR

Q.3 Explain constraint satisfaction problems in Artificial Intelligence and give precise formulation for following as constraint satisfaction problem: **(10)**
Class scheduling: There is a fixed number of professors and classrooms, a list of classes to be offered and a list of possible time slots for classes. Each professor has a set of classes that he or she can teach.

Q.4 Explain the knowledge representation and mappings with example. List different issues in knowledge representation. **(10)**

OR

Q.4 Define First-Order Logic in Artificial Intelligence. Consider a vocabulary with the following symbols: **(10)**

Occupation (p,o) : Predicate. Person p has occupation o.
Customer (p_1,p_2) : Predicate. Person p_1 is a customer of person p_2.
Boss (p_1,p_2) : Predicate. Person p_1 is a boss of person p_2.
Doctor, Surgeon, Lawyer, Actor: Constants denoting occupations.
Emily, Joe : Constants denoting people.

Use the symbols to write the following assertions in first-order logic:

a. Emily is either a surgeon or a lawyer.
b. Joe is an actor, but he also holds another job.
c. All surgeons are doctors.
d. There exists a lawyer all of whose customers are doctors.
e. Every surgeon has a lawyer.

Q.5 What is a Bayesian networks? Explain in detail how it is used in representing the uncertainty about knowledge. **(10)**

OR

Q.5 a) What is Dempster-Shafer theory? Explain in detail. **(05)**
b) Explain in detail Hierarchical planning. **(05)**

Q.6 a) Discuss importance of Expert System. **(05)**
b) Explain limitations of Expert System. **(05)**

OR

Q.6 What is an Expert System? Explain in detail components of expert system. **(10)**

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