BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)

B. Tech. Sem - VI COMPUTER SCIENCE & BUSINESS SYSTEMS : SUMMER : 2024

SUBJECT: ITC-IV: ARTIFICIAL INTELLIGENCE

Day : Monday | Time : 02:30 PM-05:30 PM

Date : 03/06/2024 | **S-24183-2024** | Max. Marks : 60

N.B.:

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Draw well labelled diagrams **WHEREVER** necessary.

Q.1 What is an Intelligent Agent? Explain structure of intelligent agent. List Applications of intelligent agents. **(10)**

OR

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

Q.2 Hill climbing search Algorithm with example. **(10)**

OR

Q.2 What is Greedy Best First Search? Explain with an example the different stages of Greedy Best First search. **(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 List different approaches to knowledge representation. Explain any one Knowledge representation approach in detail? **(10)**

OR

Q.4 Explain concept of First-Order Logic in Artificial intelligence. Write down logical representations for the following sentences. **(10)**

a) Horses, cows and pigs are mammals.
b) An offspring of a horse is a horse.
c) Bluebeard is horse.
d) Bluebeard is Charlie's parent
e) Every mammal has a parent.

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

OR

Q.5 In local nuclear power station, there is an alarm that senses when a temperature gauge exceeds a given threshold. The gauge measures the temperature of the core. Consider the Boolean variables A (Alarm sounds), FA (alarm is faulty) and G (gauge is faulty) and the multivalued nodes G (gauge reading) and T (actual core temperature).

a) Draw a Bayesian network for this domain, given that the gauge is more likely to fail when the core temperature gets too high. **(05)**
b) Suppose there are just two possible actual and measured temperatures, normal and high: the probability that the gauge gives the correct temperature is x when it is working, but y when it is faulty. Give the conditional probability table associated with G. **(05)**

Q.6 What is an Expert System? Discuss in detail any five applications of expert system. **(10)**

OR

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

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