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| **DIT UNIVERSITY, DEHRADUN**   |  |  | | --- | --- | | **BCA(Regular/Back)** | **: END TERM EXAMINATION, EVEN SEM 2022-23 (SEM VI)** | | | | | | | | | | | | | |
| **Roll No.** |  |  |  |  |  |  |  |  |  |  |  |  |
| **Subject Name: Artificial Intelligence** | | | | | | | | | | | | |

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| **Time: 3 Hours** | **Total Marks: 100** |
| **Note: All questions are compulsory. No student is allowed to leave the examination hall before the completion of the exam.**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Q.1)** | **Attempt all Parts:** | | **BTL** | **CO** | |  | (a) | What do you understand by optimization? Explain genetic algorithm. | L1 | 1 | |  | (b) | Explain semantic network representation and frames in knowledge representation with their examples. | L2 | 1 | |  | (c) | Describe union, intersection and complement operations on fuzzy sets with their suitable examples. | L2 | 2 | |  | (d) | Explain the various components of a rule based system with the help of a diagram. | L2 | 1 | |  |  | **[4 x 5= 20]** |  |  | |  | | |  |  | | **Q.2)** | **Attempt all Parts:** | | **BTL** | **CO** | |  | (a) | Define the term reasoning with example. Distinguish between monotonic and non-monotonic reasoning with examples. | L1 | 1 | |  | (b) | What are the different types of knowledge in artificial intelligence? | L1 | 1 | |  | (c) | Differentiate between feedforward and feedback artificial neural network with diagrams. | L2 | 1 | |  | (d) | What do you understand by probabilistic reasoning? Give an example. Define conditional probability with formula. | L1 | 2 | |  |  | **[4 x 5= 20]** |  |  | |  | | |  |  | | **Q.3)** | **Attempt any two parts:** | | **BTL** | **CO** | |  | (a) | Explain various propositional logical connectives along with their truth tables. | L2 | 2 | |  | (b) | What do you understand by fuzzy logic? Give an example. Explain the architecture of a fuzzy logic system with diagram. | L1 | 2 | |  | (c) | Describe expert systems. What are the different applications of expert systems? | L2 | 2 | |  |  | **[2 x 10= 20]** |  |  | |  | | |  |  | | **Q.4)** | **Attempt any two parts:** | | **BTL** | **CO** | |  | (a) | Define artificial intelligence. Discuss the various applications of artificial intelligence. | L1 | 2 | |  | (b) | Explain the different components of expert systems with diagram. | L2 | 1 | |  | (c) | Describe machine learning. Explain the various categories of machine learning with examples. | L2 | 3 | |  |  | **[2 x 10= 20]** |  |  | |  | | |  |  | | **Q.5)** | **Attempt any two parts:** | | **BTL** | **CO** | |  | (a) | Solve the following problem using Prolog programming:  In a class, there are 70% of the students who like English and 40% of the students who like English and mathematics, and then what is the percent of students who like English also like mathematics? | L3 | 4 | |  | (b) | Perform the addition, subtraction and average operations on two numbers using Prolog programming. Take the two numbers as 30 and 20. | L3 | 4 | |  | (c) | What do you understand by informed search techniques? What are the various types of informed search techniques? How informed search is different from uninformed search? | L1 | 1 | |  |  | **[2 x 10= 20]** |  |  | | -----END OF PAPER ---- | | |  |  | | |