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BTECH
(SEM VII) THEORY EXAMINATION 2020-21
ARTIFICIAL INTELLIGENCE

Time: 3 Hours**Total Marks: 100****Note:** Attempt all Sections. If require any missing data; then choose suitably.**SECTION A****1. Attempt all questions in brief.****2 x 10 = 20**

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| a. | Define perception and action. |
| b. | State PEAS description for online shopping agent. |
| c. | What are the advantages and disadvantages of breadth first search? |
| d. | Define heuristic function with suitable example. |
| e. | Explain the need of probabilistic reasoning in artificial intelligence. |
| f. | Explain the role of Bayes theorem in artificial intelligence. |
| g. | Explain data wrangling in machine learning. |
| h. | What are the key differences between the artificial intelligence and machine learning? |
| i. | Describe the applications of support vector machine in artificial intelligence. |
| j. | Explain the steps of PCA in constructing the principal component. |

SECTION B**2. Attempt any three of the following:****10x3=30**

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| a. | Describe the foundation and history of AI. |
| b. | Explain various searching techniques in AI. |
| c. | Explain the role of Hidden Markov Model (HMM) in probabilistic reasoning. |
| d. | Describe the learning with complete data-Naïve model. |
| e. | Illustrate the k-means clustering with suitable example in pattern recognition. |

SECTION C**3. Attempt any one part of the following:****10x1=10**

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| a. | Define role of agent in AI. Describe various types of intelligent agents with the help of their structure. |
| b. | Describe the use of natural language processing in AI. |

4. Attempt any one part of the following:**10x1=10**

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| a. | What is adversarial search? Write the steps for game problem formulation. State and explain minimax algorithm with tic-tac-toe game. |
| b. | Explain the local search algorithm with suitable example. Explain the use of local search algorithm in traveling salesman problem. |

5. Attempt any one part of the following:**10x1=10**

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| a. | What is the difference between forward chaining and backward chaining? Discuss. |
| b. | Determine whether the following argument is valid. |



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| If a baby is hungry, then the baby cries. If the baby is not mad, then he does not cry. If a baby is mad, then his face looks abnormal. Therefore, if a baby is hungry, then his face looks abnormal. |
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6. Attempt any *one* part of the following:

10x1=10

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| a. | Describe the learning with hidden data with suitable example. |
| b. | Define the term reinforcement learning. How does the passive reinforcement learning differ from active reinforcement learning? |

7. Attempt any *one* part of the following:

10x1=10

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| a. | Write the short note on the following: i. Design principle of pattern recognition system ii. Statistical pattern recognition iii. Linear Discriminant Analysis |
| b. | Describe the nearest neighbor rule and Bayes classifier in pattern recognition. |

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