PAPER ID-310596

Roll No: | | | | | | | | | | |

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**

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**

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 thek-means clustering with suitable example in pattern recognition.

SECTION C

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

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**

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**

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.

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

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

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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