Sub Code:NCS702

Paper Id: 110714 Roll No: | | | | | | | | | | |

B. TECH.
(SEM VII) THEORY EXAMINATION 2019-20
ARTIFICIAL INTELLIGENCE

Time: 3 Hours *Total Marks: 100*

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

a. Differentiate between classification and regression.
b. Define natural language processing.
c. Describe the Turing test in AI.
d. Explain nearest neighbor rule.
e. Define backward chaining.
f. Describe best first search.
g. Define reinforcement learning.
h. Define rules of inference.
i. Explain uninformed search strategies.
j. Describe the structure of agent program with suitable example.

SECTION B

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

a. Write the application of artificial intelligence. Define intelligent agents. Describe the structure of intelligent agents.
b. Explain BFS and DFS search technique in detail. Describe A* search technique with suitable example.
c. Write a note on Linear Discriminant Analysis (LDA). Justify the use of Principle component analysis (PCA) in dimension reduction.
d. Explain supervised and unsupervised learning with suitable example.
e. Prove that following statements are inconsistent:
   i) Aman loves Priya and John is not happy but her parents are happy.
   ii) If Aman marries Priya then Amar and her friend John will be happy.
   iii) Aman will marry Priya if Priya loves Aman.

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

a. Describe Bayesian networks. How are the Bayesian networks powerful representation for uncertainty knowledge?
b. Determine whether the following argument is valid.
"If I work whole night on this problem, then I can solve it. If I solve the problem, then I will understand the topic. Therefore, I will work whole night on this problem, then I will understand the topic."

4. Attempt any *one* part of the following: **10 x 1 = 10**

a. Define pattern recognition. Explain design principles of pattern recognition system with suitable example.
b. What is clustering? Describe k-mean clustering technique.

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5. **Attempt any *one* part of the following:** **10 x 1 = 10**

a. Write short notes on the following
   i. N-queen problem
   ii. Hill climbing search

b. Explain Min-max procedure. Describe alpha-beta and give other modifications to the min max procedure to improve its performance.

6. **Attempt any *one* part of the following:** **10 x 1 = 10**

a. Illustrate decision trees learning technique using a suitable example.

b. Explain support vector machine with suitable example.

7. **Attempt any *one* part of the following:** **10 x 1 = 10**

a. Describe the role of computer vision in artificial intelligence

b. Define Hidden Markov Model. Explain how HMM can be used for speech recognition.

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