

Paper Id: **110730**Roll No:

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

Time: 3 Hours**Total Marks: 70****Note: 1. Attempt all Sections. If require any missing data; then choose suitably.****SECTION A**

- 1. Attempt all questions in brief. 2 x 7 = 14**
- Write the history of artificial intelligence.
 - Describe optimal problem with suitable example.
 - Define utility theory.
 - What are statistical learning models?
 - Define Bayes classifier.
 - Justify the use of searching in game.
 - Write the difference between the propositional and predicate logic.

SECTION B

- 2. Attempt any three of the following: 7 x 3 = 21**
- Define Principle component analysis (PCA). Determine the 2 PCA of the following set of observations of 2-dimensional data having 5 examples

S. No.	X	Y
1	-1.4	-1.9
2	-0.5	-0.8
3	0.1	0.1
4	0.8	1.1
5	1.4	1.8

- Explain about the Hill climbing algorithm with its drawback and how it can be overcome?
- Describe the rules of inference in first order predicate logic with suitable example.
- Define Reinforcement learning. Differentiate between the passive and active reinforcement learning. Is for evolution reinforcement learning an appropriate abstract model for human learning?
- Explain the role of artificial intelligence in natural language processing.

SECTION C

- 3. Attempt any one part of the following: 7 x 1 = 7**
- Define intelligent agent. Explain various types agent programs with suitable example.
 - Explain computer vision in parlance to the artificial intelligence,
- 4. Attempt any one part of the following: 7 x 1 = 7**
- What is heuristic function? Differentiate between blind search and heuristic search strategies.
 - What is adversarial search? Write the steps for game problem formulation. State and explain minimax algorithm with tic-tac-toe game.
- 5. Attempt any one part of the following: 7 x 1 = 7**
- Differentiate between forward and backward chaining of inference with the help of example.

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- (b) Translate the following sentences in formulas in predicate logic and casual form:
- John likes all kind of food.
 - Apples are food.
 - Chicken is food.
 - Anything anyone eats and is not killed by is food.
 - Bill eats peanuts and is still alive.
 - Sue eats everything Bill eats.

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

7 x 1 = 7

- Define machine learning. Explain supervised and unsupervised learning with suitable example. <https://www.aktuonline.com>
- Explain the following in detail
 - Naïve Bayes model
 - Learning with hidden data- EM algorithm

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

7 x 1 = 7

- How Linear Discriminant Analysis is different from logistics regression? Explain Linear Discriminant Analysis (LDA) with suitable example.
- What is clustering? Describe k-mean clustering technique.