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IT'S HARD TO BEAT A PERSON WHO NEVER GIVES UP.

Babe Ruth, American professional baseball player

B.E. (Information Technology) Eighth Semester (C.B.S.)
Elective-III : Machine Learning

P. Pages : 2

Time : Three Hours

0818

NRT/KS/19/3705

Max. Marks : 80

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Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.
10. Illustrate your answers whenever necessary with the help of neat sketches.
11. Use of non programmable calculator is permitted.

1. a) Explain the concept and various types of machine learning. **8**

b) Give two computer applications for which machine learning approaches Seems to appropriate and two applications where they seems in appropriate. Justify with example. **6**

OR

2. a) Explain linear models for regression with example. **8**

b) What are the various issues in machine learning and how to overcome them. **6**

3. a) Explain the ways in which supervised problems can be generalized. **6**

b) Explain back-propagation learning with example. **7**

OR

4. a) What are the various linear models used for classification. **6**

b) Elaborate the method of learning for non-linear hypothesis with perceptron. **7**

5. a) Write k-means algorithm. Apply it to classify the following data in 2 clusters.
Data : 3, 3.5, 5, 3.3, 4.5, 6.2, 5.3
Use Euclidean distance method. **7**

b) Why is dimensionality reduction is important in machine learning? State Pro's and Con's of them. **6**

OR

6. a) What is Neural Network? Explain Feed forward Neural Network. **7**

b) Explain dual node representation in Kernel based learning. **6**

| 7. | a) | Explain k-nearest neighbour algorithm with example. | **6** |
| | b) | How Occam's razor principles works in machine learning? | **7** |

OR

8.	a)	Explain the algorithm for hypothesis class and target class.	**6**
	b)	Explain how approximation and estimation errors are related to each other.	**7**
9.	a)	State and explain the significance of support vector machine in Machin learning.	**6**
	b)	Explain how learning and improvement metrics are used to evaluate machine learning algorithms.	**7**

OR

10.	a)	Explain the importance of maximum margin classifier.	**7**
	b)	Differentiate between bootstrapping, boosting and bagging.	**6**
11.	a)	Explain the concept of Reinforcement learning with suitable example.	**8**
	b)	Explain Monto-Carlo Algorithm.	**6**

OR

| 12. | | Write a short note on **any three.** | **14** |

    i) K-Armed Bandit - Elements.

    ii) Model Based learning.

    iii) Exploration strategies.

    iv) Semi-supervised learning

    v) Accuracy and confidence boosting.

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~ Babe Ruth