TEE2033CS - Elective Paper-II : Machine Learning

P. Pages : 1

GUG/W/23/13825

Time : Three Hours

7412

Max. Marks : 80

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Notes : 1. All questions are compulsory.
2. All questions carry equal marks.
3. Due credit will be given to neatness and adequate dimensions.
4. Assume suitable data wherever necessary.

1. a) Define Machine learning? Briefly explain the different types of Machine Learning. **8**

b) Differentiate between supervised and unsupervised machine learning. **8**

OR

2. a) What do you mean by overfitting and underfitting? Explain the techniques to overcome it. **8**

b) What is Association Rule? Explain Market Basket Analysis with suitable example. **8**

3. a) What are Decision Trees? Explain with suitable example. **8**

b) Explain support vector machine (SVM)? What is the significance of optimal separating hyperplane in SVM? **8**

OR

4. a) What is a Perceptron? Explain the working of a perceptron with a neat diagram. **8**

b) What is an Activation function? Why do we need non-linear activation function? List activation functions and explain any one of them. **8**

5. a) What is regularization? Explain L1 and L2 regularization techniques. **8**

b) What is Hard Margin and Soft Margin in SVM. Explain with suitable example. **8**

OR

6. a) Briefly describe the concept of model selection and generalization. **8**

b) Describe the significance of Kernel functions in SVM. List any two kernel functions. **8**

7. a) Define clustering. What are the different types of clustering? Explain in detail? **8**

b) Write down the major differences between K-mean clustering and hierarchical clustering. **8**

OR

8. a) Illustrate K-means clustering algorithm with an example. **8**

b) Use K-means clustering to cluster the following data into two groups.
Assume cluster centroid are m1 = 2 and m2 = 4.
The distance function used is Euclidean distance.
{2, 4, 10, 12, 3, 20, 30, 11, 25}. **8**

9. a) What is PCA? Explain its process with their applications. **8**

b) Why features selection is important in machine learning?
What are the advantages of feature selection? What are feature selection techniques? **8**

OR

10. a) What is dimensionality reduction? Explain any one technique with example. **8**

b) Differentiate between feature selection and feature extraction? **8**

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