AIL307 - Feature Engineering Question Bank

Unit-1: Introduction to feature engineering

1. Define feature engineering. Explain its need in machine learning.
2. Describe feature engineering. Explain steps to evaluate feature engineering procedure.
3. Explain Machine Learning pipeline with neat diagram. What is importance of feature engineering in Machine Learning pipeline.
4. Describe different metrics used for evaluating supervised and unsupervised learning algorithm.
5. Explain steps to evaluate feature engineering procedure. What is its need?
6. Explain different feature improvement techniques.
7. Explain feature selection briefly with its need.
8. Describe feature construction with its need.
9. Discuss the importance of feature transformation.
10. Explain feature learning with its importance.

Unit -2: Basics of Feature Representation

1. Describe following terms used in feature representation.
    a. Scalar b. Vector c. Feature Space
2. Explain binarization and quantization methods.
3. Explain the concept of binning with its need.
4. Discuss the power of transformation. Explain the effect of logarithmic transformation with example.
5. Describe min-max scaling in detail.
6. Describe standardization method in detail.
7. Explain Box Cox transformation. What is effect of Box Cox transformation?
8. Discuss ℓ2 normalization in detail.
9. A scientist did experiments four times, and their results were 12, 26, 28 and 32. Calculate the normalized values for each observation.
10. What is ℓ2 normalization? Determine the ℓ2 normalized values for observed outcome as 1, 2, 3.
11. Explain Interaction Features with suitable example. What are advantages of Interaction Features?