**[6180]-313**

# T.E. (Computer Engg.) (Honors)
## DATA SCIENCE AND VISUALIZATION
### (2019 Pattern) (Semester-I) (310501)

*Time : 2½ Hours]*        *[Max. Marks : 70*

*Instructions to the candidates:*

1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.*
2) *Figures to the right indicate full marks.*
3) *Neat diagrams must be drawn whenever necessary.*
4) *Assume Suitable data if necessary.*

**Q1) a)** Explain random forest algorithm with appropriate example. **[6]**

   **b)** Explain Apriori Algorithm used in machine learning with valid example.**[6]**

   **c)** Write a note on **[6]**

      i) Partitioning Clustering

      ii) Density-Based Clustering

### OR

**Q2) a)** What is clustering? Explain K-means clustering algorithm. **[6]**

   **b)** State and explain how Naive Bays classifier can be used to solve the classification problems? **[6]**

   **c)** Illustrate how you will evaluate association rules. **[6]**

**Q3) a)** State and explain the different constituents of the decision tree. **[9]**

   **b)** Write a note on **[8]**

      i) Entropy

      ii) Gini index

### OR

**Q4) a)** When do you use Backpropagation in Neural Networks? Explain by taking a suitable example. **[9]**

   **b)** What is entropy? How entropy is calculated explain with a suitable example. **[8]**

**Q5)** a) Define the term Dashboard along with its evolution and steps to design the dashboard. **[9]**

b) Write a note On: **[9]**

   i) Histograms

   ii) Bar garphs

   iii) Scatterplots

<center>OR</center>

**Q6)** a) Explain the terms Network hierarchies and reports associated with data visualization. **[6]**

b) Write a note on advanced visualization techniques and explain anyone of them. **[6]**

c) Write a note on 'display media for Dashboard'. **[6]**

**Q7)** a) What are different types of data model explain in brief. **[6]**

b) List the advantages of multi-dimensional data model? **[6]**

c) Discuss the challenges of clustering High-dimensional data. **[5]**

<center>OR</center>

**Q8)** a) Explain the need of data modelling. **[6]**

b) Explain multidimensional data model with one example. **[6]**

c) Explain Principal Component Analysis (PCA) with appropriate example. **[5]**

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