December 2023

B.Tech. [CE(DS)] – VII SEMESTER

Business Intelligence & Predictive Analysis

(PCC–DS–704)

Time : 3 Hours]   [Maximum Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*

2. *Answer any **four** questions from Part-B in detail.*

3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART–A

1.   (a) How Data, Information and Knowledge are different from one another? Explain with Example.   (1.5)

    (b) What are the difference between Static Reports and Ad-Hoc Analysis?   (1.5)

    (c) What is Box plot? Explain with Diagram.   (1.5)

    (d) What is Interactive Analysis? Explain with Example.   (1.5)

    (e) Consider a DEA model with four DMUs and three inputs (X1, X2, and X3) and one output (Y). Calculate

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7.   (a) Write difference between Dashboard and Scorecard.   (5)

    (b) What is Pattern Matching? How it Works and what are its Steps?   (5)

    (c) Write a Short note on Confusion Matrix in Machine Learning.   (5)

the efficiency scores for each DMU using the CCR model. The inputs and output for each DMU are given in the table below: (1.5)

DMU	Input X1	Input X2	Input X3	Output Y
1	5	3	4	12
2	4	2	3	10
3	6	2	5	15

(f) What are the Virtual inputs and virtual outputs in DEA? Explain in Brief. (1.5)

(g) How pattern matching is different from pattern recognition in machine learning? (1.5)

(h) What is Data exploration and why it is important? (1.5)

(i) Explain MSPE Prediction measures with formula. (1.5)

(j) What is Overfitting and Underfitting in machine learning? (1.5)

PART–B

2. (a) What is BI ? Explain all the Phases in the development of a business intelligence system with Diagram. (10)

(b) Write a short note on Ethics and business intelligence. (5)

3. (a) What is Visualization? Explain some common types of data visualizations with diagram. (10)

(b) Who are the various Business Intelligence Users? Explain. (5)

4. What is Outlier Analysis? How do outliers end up in datasets? What are the different types of Outliers and what are the different Outlier Analysis Techniques? Explain with Example. (15)

5. (a) Consider a dataset with two variables: X, Y, represented by the following data points:

X	2	3	4	5	6	7
Y	1	5	3	6	7	8

Perform Principal Component Analysis (PCA) to reduce the dimensionality from 2 variables to 1 variables. Calculate the principal components. Also, express the original data points in the new 1-dimensional space. (10)

(b) What is Predictive Analysis? Explain Logistic Regression in Brief. (5)

6. (a) What are Missing Observations and How to treat Missing Observations? (10)

(b) Write a Short Note on CCR Model in DEA. (5)