SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

23MCT305 – DATA ANALYTICS IN AUTOMATION SYSTEM

TECHNICAL PUZZLES

UNIT II: DATA PREPARATION AND VISUALISATION (CO2)

Puzzle No.	Puzzle Description	Expected Approach / Key Concept	Bloom's Level	CO
1	You have sensor data with 20% missing values due to network drops and 15% outliers due to electromagnetic interference. Propose a sequence of exactly 4 pre-processing steps to make it ready for visualization, and explain why the order matters.	Imputation → Outlier treatment → Normalization → Smoothing; order prevents distortion	Apply	CO2
2	In Tableau, you need to detect anomalies in temperature sensor data from 100 machines. List 4 different visualizations you would combine in one dashboard and explain how each helps in anomaly detection.	Line chart (trend), Heatmap (machine comparison), Box plot (outliers), Scatter (correlation)	Create	CO2
3	A log file contains timestamps, machine IDs, and unstructured error messages. Design a 3-step pre-processing strategy to convert it into a structured format suitable for Tableau exploration. Justify each step.	Parsing → Extraction → Normalization	Analyze	CO2
4	You are given two datasets: raw high-frequency vibration data (noisy) and aggregated daily averages (clean). Argue which one is better for initial exploratory visualization in Tableau and why, even if the noisy one has more information.	Aggregated (patterns visible first)	Evaluate	CO2
5	Create a rule of thumb (simple if-then conditions) for choosing between Min-Max scaling and Z-score normalization when preparing multivariate sensor data (temperature, pressure, flow) for visualization.	If bounded range needed → Min-Max; if outlier robustness → Z-score	Create	CO2