



**23MCT305 – DATA ANALYTICS IN AUTOMATION SYSTEM  
TECHNICAL PUZZLES**

**UNIT I: INTRODUCTION TO BIG DATA AND AUTOMATION SYSTEMS (CO1)**

<b>Puzzle No.</b>	<b>Puzzle Description</b>	<b>Expected Approach / Key Concept</b>	<b>Bloom's Level</b>	<b>CO</b>
1	A factory generates 10 TB of sensor data daily (Volume), at 1 million records per second (Velocity), from 50 different sensor types and log formats (Variety), with 5% erroneous readings (Veracity), leading to \$1M annual savings through analytics (Value). Rearrange these 5 factors in decreasing order of challenge they pose for traditional automation systems migrating to Industry 4.0. Justify the top two.	Prioritize Velocity → Variety → Volume → Veracity → Value	Analyze	CO1
2	In an automation system, Component A collects data, Component B processes it, Component C actuates changes, and Component D provides interface. Match these to Sensors, Controllers, Actuators, HMI. Then explain which component benefits most from Big Data analytics and why.	Sensors → A, Controllers → B, Actuators → C, HMI → D; Controllers benefit most (real-time decision-making)	Apply	CO1
3	You have three statements: (1) Industry 4.0 is possible without Big Data, (2) Big Data requires cyber-physical systems, (3) Data-driven decision-making eliminates all manual intervention. Identify which one(s) are false and provide counter-examples from automation contexts.	All three are false; provide justification	Evaluate	CO1
4	A company claims their automation system handles "Big Data" because it processes 1 GB per day. Challenge this claim using the 5V framework and suggest the minimum threshold for two Vs that would qualify it as true Big Data in industrial automation.	Challenge on Volume and Velocity; suggest thresholds	Analyze	CO1
5	Design a simple decision flowchart (describe in steps) for an automation engineer to decide whether a dataset qualifies as Big Data for	Flowchart using Volume > TB/day,	Create	CO1

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	their system, based only on the characteristics taught in Unit I.	Velocity > real-time, etc.		