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## DY0-001 Practice Test Fee | DY0-001 Exam Fees

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## CompTIA DY0-001 Exam Syllabus Topics:

Topic	Details

Topic 1	<ul style="list-style-type: none"> <li>Operations and Processes: This section of the exam measures skills of an AI</li> <li>ML Operations Specialist and evaluates understanding of data ingestion methods, pipeline orchestration, data cleaning, and version control in the data science workflow. Candidates are expected to understand infrastructure needs for various data types and formats, manage clean code practices, and follow documentation standards. The section also explores DevOps and MLOps concepts, including continuous deployment, model performance monitoring, and deployment across environments like cloud, containers, and edge systems.</li> </ul>
Topic 2	<ul style="list-style-type: none"> <li>Mathematics and Statistics: This section of the exam measures skills of a Data Scientist and covers the application of various statistical techniques used in data science, such as hypothesis testing, regression metrics, and probability functions. It also evaluates understanding of statistical distributions, types of data missingness, and probability models. Candidates are expected to understand essential linear algebra and calculus concepts relevant to data manipulation and analysis, as well as compare time-based models like ARIMA and longitudinal studies used for forecasting and causal inference.</li> </ul>
Topic 3	<ul style="list-style-type: none"> <li>Machine Learning: This section of the exam measures skills of a Machine Learning Engineer and covers foundational ML concepts such as overfitting, feature selection, and ensemble models. It includes supervised learning algorithms, tree-based methods, and regression techniques. The domain introduces deep learning frameworks and architectures like CNNs, RNNs, and transformers, along with optimization methods. It also addresses unsupervised learning, dimensionality reduction, and clustering models, helping candidates understand the wide range of ML applications and techniques used in modern analytics.</li> </ul>
Topic 4	<ul style="list-style-type: none"> <li>Modeling, Analysis, and Outcomes: This section of the exam measures skills of a Data Science Consultant and focuses on exploratory data analysis, feature identification, and visualization techniques to interpret object behavior and relationships. It explores data quality issues, data enrichment practices like feature engineering and transformation, and model design processes including iterations and performance assessments. Candidates are also evaluated on their ability to justify model selections through experiment outcomes and communicate insights effectively to diverse business audiences using appropriate visualization tools.</li> </ul>
Topic 5	<ul style="list-style-type: none"> <li>Specialized Applications of Data Science: This section of the exam measures skills of a Senior Data Analyst and introduces advanced topics like constrained optimization, reinforcement learning, and edge computing. It covers natural language processing fundamentals such as text tokenization, embeddings, sentiment analysis, and LLMs. Candidates also explore computer vision tasks like object detection and segmentation, and are assessed on their understanding of graph theory, anomaly detection, heuristics, and multimodal machine learning, showing how data science extends across multiple domains and applications.</li> </ul>

## CompTIA DataX Certification Exam Sample Questions (Q48-Q53):

### NEW QUESTION # 48

A company created a very popular collectible card set. Collectors attempt to collect the entire set, but the availability of each card varies, because some cards have higher production volumes than others. The set contains a total of 12 cards. The attributes of the cards are shown.

Card number	Wrapper color	Wrapper shape	Animal	Habitat
1	Red	Diamond	Dog	Land
2	Red	Triangle	Whale	Sea
3	Red	Diamond	Fish	Sea
4	Red	Triangle	Shark	Sea
5	Red	Diamond	Elephant	Land
6	Red	Triangle	Squid	Sea
7	Black	Diamond	Bird	Land
8	Black	Triangle	Horse	Land
9	Black	Diamond	Octopus	Sea
10	Black	Triangle	Clam	Sea
11	Black	Diamond	Bear	Land
12	Black	Triangle	Lion	Land

The data scientist is tasked with designing an initial model iteration to predict whether the animal on the card lives in the sea or on land, given the card's features: Wrapper color, Wrapper shape, and Animal.

Which of the following is the best way to accomplish this task?

- A. Linear regression
- B. ARIMA
- C. Association rules
- D. Decision trees

**Answer: D**

Explanation:

# Decision trees are supervised classification models that can be used to predict a categorical target variable (e.g., Habitat: Land or Sea) based on input features (e.g., Wrapper color, Wrapper shape, Animal type). They are interpretable, require minimal preprocessing, and are ideal for structured categorical data like this.

Why the other options are incorrect:

- \* A: ARIMA (AutoRegressive Integrated Moving Average) is used for time-series forecasting, not classification.
- \* B: Linear regression is used for predicting continuous numeric values, not categorical variables like "Land" or "Sea".
- \* C: Association rules (like in market basket analysis) are used to discover relationships or co-occurrence among variables, not to build predictive models.

Official References:

- \* CompTIA DataX (DY0-001) Study Guide - Section 4.1 & 4.2: "Decision trees are powerful classifiers for categorical output variables and allow for interpretable models based on feature splits."
- \* Machine Learning Textbook, Chapter 6: "Decision trees are ideal for early-stage model prototyping when the output is categorical and the data structure is tabular."

#### NEW QUESTION # 49

A data scientist is developing a model to predict the outcome of a vote for a national mascot. The choice is between tigers and lions. The full data set represents feedback from individuals representing 17 professions and 12 different locations. The following rank aggregation represents 80% of the data set:

Survey rank	Profession	Location	Voter preference
1	Data scientist	4	Tigers
2	Data scientist	3	Tigers
3	Data analyst	4	Tigers

(Screenshot shows survey rankings for just two professions and a few locations, all voting for "Tigers") Which of the following is the most likely concern about the model's ability to predict the outcome of the vote?

- A. Out-of-sample data
- B. In-sample data
- C. Interpolated data
- D. Extrapolated data

**Answer: D**

Explanation:

# Extrapolated data refers to making predictions about data points that fall outside the observed range or distribution. Since the sample data (80%) is heavily skewed toward a small subset of professions and locations, predicting results for the remaining unrepresented professions and regions involves extrapolation.

Why the other options are incorrect:

- \* A: Interpolation occurs within the bounds of observed data - not the issue here.
- \* C: In-sample data refers to training data, which is overrepresented in this case.
- \* D: Out-of-sample data is a concern in generalization but extrapolation is more specific here.

Official References:

- \* CompTIA DataX (DY0-001) Study Guide - Section 3.2: "Extrapolation introduces risk when models are used outside the range of data they were trained on, especially if certain subgroups are underrepresented."

#### NEW QUESTION # 50

A data scientist observes findings that indicate that as electrical grids in a country become more and more connected over time, the frequency of brownouts and blackouts in total decrease, and the frequency of major brownouts and blackouts increase. Which of the following distribution metrics could best be identified?

- A. Skewness
- B. Scale axis magnitudes
- C. Kurtosis
- D. Normality

**Answer: C**

Explanation:

# Kurtosis is a statistical measure that describes the "tailedness" or extremity of values in a distribution. The observation that smaller events decrease while extreme events increase indicates a rise in heavy tails - a textbook sign of increasing kurtosis. This reflects a distribution becoming more prone to extreme values (e.g., more impactful blackouts).

Why the other options are incorrect:

- \* A: "Scale axis magnitudes" is not a statistical metric but refers to plotting.
- \* C: Skewness measures asymmetry, not the frequency of extreme values.
- \* D: Normality checks whether a distribution follows the normal distribution, not its tail behavior.

Official References:

- \* CompTIA DataX (DY0-001) Official Study Guide - Section 1.3: "Kurtosis measures the presence of outliers and extreme values in a distribution - higher kurtosis suggests more frequent extreme events."
- \* Applied Statistical Analysis, Chapter 4: "Kurtosis provides insight into the likelihood of extreme deviations and is useful in risk and reliability analysis."

#### NEW QUESTION # 51

A data scientist is working with a data set that has ten predictors and wants to use only the predictors that most influence the results. Which of the following models would be the best for the data scientist to use?

- A. LASSO
- B. OLS
- C. Weighted least squares
- D. Ridge

**Answer: A**

Explanation:

# LASSO (Least Absolute Shrinkage and Selection Operator) regression performs both variable selection and regularization by adding an L1 penalty to the loss function. It shrinks less important feature coefficients to zero, effectively performing feature selection - perfect for identifying the most influential predictors.

Why the other options are incorrect:

- \* A: OLS uses all predictors and doesn't perform feature selection.
- \* B: Ridge regression applies an L2 penalty, shrinking coefficients but keeping all predictors.
- \* C: Weighted least squares adjusts for heteroscedasticity but doesn't reduce variable count.

Official References:

\* CompTIA DataX (DY0-001) Study Guide - Section 3.3:"LASSO performs feature selection by zeroing out coefficients of less significant predictors."

\* Statistical Learning Textbook, Chapter 6:"LASSO regression is ideal when model interpretability and variable reduction are important."

## NEW QUESTION # 52

A data scientist needs to:

Build a predictive model that gives the likelihood that a car will get a flat tire.

Provide a data set of cars that had flat tires and cars that did not.

All the cars in the data set had sensors taking weekly measurements of tire pressure similar to the sensors that will be installed in the cars consumers drive.

Which of the following is the most immediate data concern?

- A. Insufficient domain expertise
- B. Multivariate outliers
- C. **Granularity misalignment**
- D. Lagged observations

**Answer: C**

Explanation:

# Granularity misalignment refers to a mismatch between the level of detail in the predictor variables and the event being predicted. In this case, flat tires are likely discrete, infrequent events, while tire pressure is measured weekly. If the prediction model is trying to link a specific tire pressure value to a binary outcome (flat tire: yes/no), and the timing doesn't align precisely, the predictor variable (pressure) may not be granular enough to accurately associate with the event.

Why the other options are incorrect:

- \* B: While outliers can exist, they are not the most immediate concern given the time-series nature of the data.
- \* C: While domain expertise is helpful, it doesn't directly address the data structure issue.
- \* D: Lagged observations can be engineered in modeling but aren't the primary problem here.

Official References:

\* CompTIA DataX (DY0-001) Official Study Guide - Section 3.1 (Data Granularity):"Granularity misalignment occurs when the temporal or spatial resolution of features does not align with the prediction target."

\* Data Science Process Guide, Section 2.3.'Predictive performance can suffer when temporal mismatch exists between observations and outcomes. Granularity issues must be resolved prior to modeling."

## NEW QUESTION # 53

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