SAS ® Viya ® Forecasting and Optimization Exam

Data Visualization (15% – 20%)

Create project and load data

- Create a Forecasting project (define variable roles)
- Load data from various sources
- Use Data tab functionality

Visualize data using attribute variables

- Load Attributes table
- Identify scenarios in which attribute variable are useful in visualizing data
- Create a Visualization using Attribute Variables

Pipeline Modeling (25% – 30%)

Model using a pipeline

- Auto-forecast using a pipeline
- Build and run a custom pipeline
- Given a scenario select and use appropriate pipeline template
- Visualize the forecasts

Determine the champion models

- Compare models within a pipeline
- Recognize and interpret the model family of the champion model
- Define the role of accuracy statistics in pipeline comparison
- Select the champion model for the project
- Explore the champion model

Judge model accuracy using accuracy statistics

- Define and calculate MAPE, MAE, RMSE Adaptive learning
- Given a scenario determine when is best appropriate to use MAPE, MAE or RMSE
- Use a holdout sample to do honest assessment

Hierarchical Forecasting (15% – 20%)

Generate a forecast using data with a hierarchical structure

- Generate a hierarchical forecast with default functionality
- Improve the fit of a forecast by adding combined models
- Share a model using The Exchange
- Visualize the forecast models for a given level of the hierarchy

Use Time Series data creation options

- Explain the differences between data accumulation and data aggregation
- Given a scenario select the appropriate accumulation or aggregation options

Implement a hierarchical model or combined model

- Given a scenario select the appropriate reconciliation method for a hierarchical model
- Generate a combined model

Post-Forecasting Functionality (10% – 15%)

Implement an override on a forecast in SAS Model Studio

- Apply an override to a forecast
- Resolve an override conflict
- Use attribute variable to set an override
- Disseminate tables containing the results of a forecast (manually vs. automatically)

Export a forecast

- Prepare exported data set for use in SAS Visual Analytics

Optimization (25% – 30%)

Optimize using Linear Programming

- Explain local properties of functions that are used to solve mathematical optimization problems
- Use the OPTMODEL procedure to enter and solve simple linear programming problems
- Formulate linear programming problems using index sets of arrays of decision variables, families of constraints, and values stored in parameter arrays
- Modify a linear programming problem (changing bounds or coefficients, fixing variables, adding variables or constraints) within the OPTMODEL procedure

Optimize using Nonlinear Programming

- Use the OPTMODEL procedure to enter and solve simple nonlinear programming problems
- Describe how, conceptually and geometrically, iterative improvement algorithms solve nonlinear programming problems
- Identify the optimality conditions for nonlinear programming problems
- Solve nonlinear programming problems using OPTMODEL procedure
- Interpret information written to the SAS log during the solution of a nonlinear programming problem
- Differentiate between the NLP algorithms and how solver options influence the NLP algorithms

Optimize using Mixed Integer Linear Programming

- Use the OPTMODEL procedure to enter and solve simple MILP problems
- Identify the optimality conditions for MILP problems
- Solve MILP programming problems using the OPTMODEL procedure

---

Note: All 13 main objectives will be tested on every exam. The expanded objectives are provided for additional explanation and define the entire domain that could be tested.