Grading Rubric – Homework #5: ARIMA Forecasting

Total Points: 100
Course: Forecasting 301

Problem 1: Explore & Visualize – 25 pts

- 5 pts – Load dataset with proper PeriodIndex
- 5 pts – Clear time-series line chart with labeled axes
- 8 pts – Accurate narrative on trend and seasonality
- 4 pts – Discussion of variance/stationarity
- 3 pts – ACF & PACF plots and correct initial interpretation

Problem 2: Decompose & Difference – 20 pts

- 5 pts – STL or classical decomposition executed
- 5 pts – Justified choice of non-seasonal differencing d
- 5 pts – Justified choice of seasonal differencing D
- 5 pts – Evidence (plots/stats) supporting choices

Problem 3: Model Selection – 25 pts

- 5 pts – Hold-out split: last 24 months
- 5 pts – Model search (auto_arima or manual grid) documented
- 5 pts – Model selected using information criteria (lowest AIC/BIC)
- 5 pts – Residual diagnostics (Ljung-Box, QQ plot) performed
- 5 pts – Clear interpretation of model coefficients & diagnostics

Problem 4: Forecast & Evaluate – 30 pts

- 6 pts – 12-step forecast with 80 % & 95 % intervals
- 6 pts – Plot forecasts vs actuals, clearly labeled
- 6 pts – Compute RMSE and MAPE on hold-out
- 6 pts – Baseline comparison (e.g., naive seasonal) discussed
- 6 pts – Thoughtful discussion on model limitations & improvements

A submission scoring 90 – 100 demonstrates flawless execution, clear explanations, and professional presentation. A 70 – 79 meets basic requirements but shows gaps in diagnostics or discussion. Below 60 lacks core analyses or has major conceptual errors.