

View Report

R1

(Number of First Attempts: 40)

MCQ

Question 1 Difficulty: 1

What is the purpose of Box-Cox transformation?

- ☒ Ensures that 'range' or volatility of data is largely constant before modelling 36 (90 %)
 - ☐ Render the data stationary 3 (7.5 %)
 - ☐ Remove the impact of calendar effects 0 (0 %)
 - ☐ Remove the effect of inflation 1 (2.5 %)
- Average Grade: 0.9 / 1 (90 %)

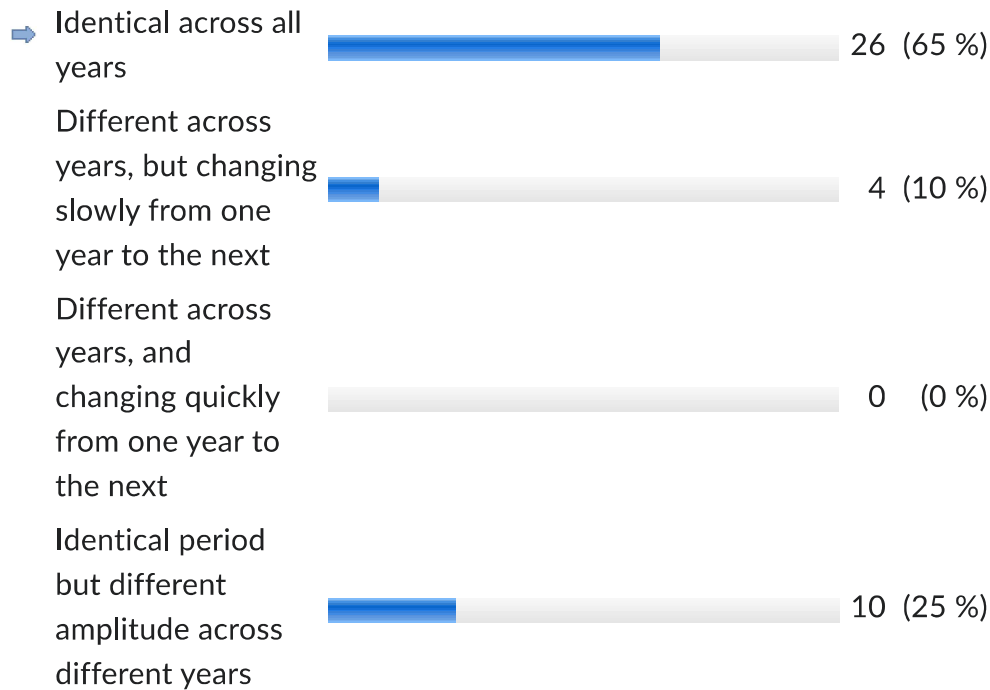
Question 2 Difficulty: 1

What are components of a time series that may be output from time series decomposition?

- ☐ Stationary, Non stationary, Stochastic 0 (0 %)
 - ☐ Deterministic, Non deterministic 0 (0 %)
 - ☒ Trend, Seasonal, Remainder 39 (97.5 %)
 - ☐ Level, trend, remainder 1 (2.5 %)
- Average Grade: 0.98 / 1 (97.5 %)

Question 3 Difficulty: 1

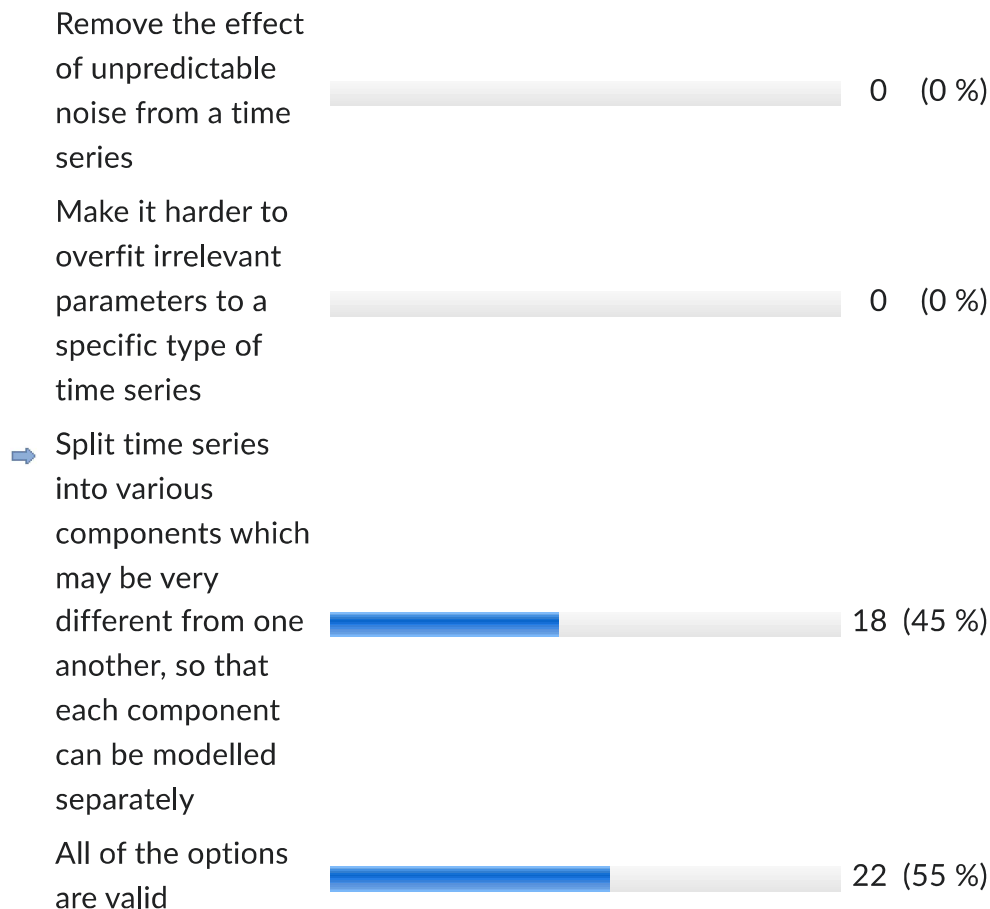
For the output of classical time series decomposition, is the component representing cyclical patterns with an annual period:



Average Grade: 0.65 / 1 (65 %)

Question 4 Difficulty: 1

What is the overall purpose of time series decomposition?



Average Grade: 0.45 / 1 (45 %)


Question 5 Difficulty: 1

What is purpose of Ljung-Box test?

Check if
residuals from a
time series
estimation still
contain time
series
information,
defined as
significant noise

 1 (2.5 %)

Check if
residuals from a
time series
estimation still
contain time
series
information,
defined as
significant
cyclical patterns

 0 (0 %)

Check if
residuals from a
time series
estimation still
contain time
series
information,
defined as
significant
trends

Average Grade: 0.98 / 1 (97.5 %)

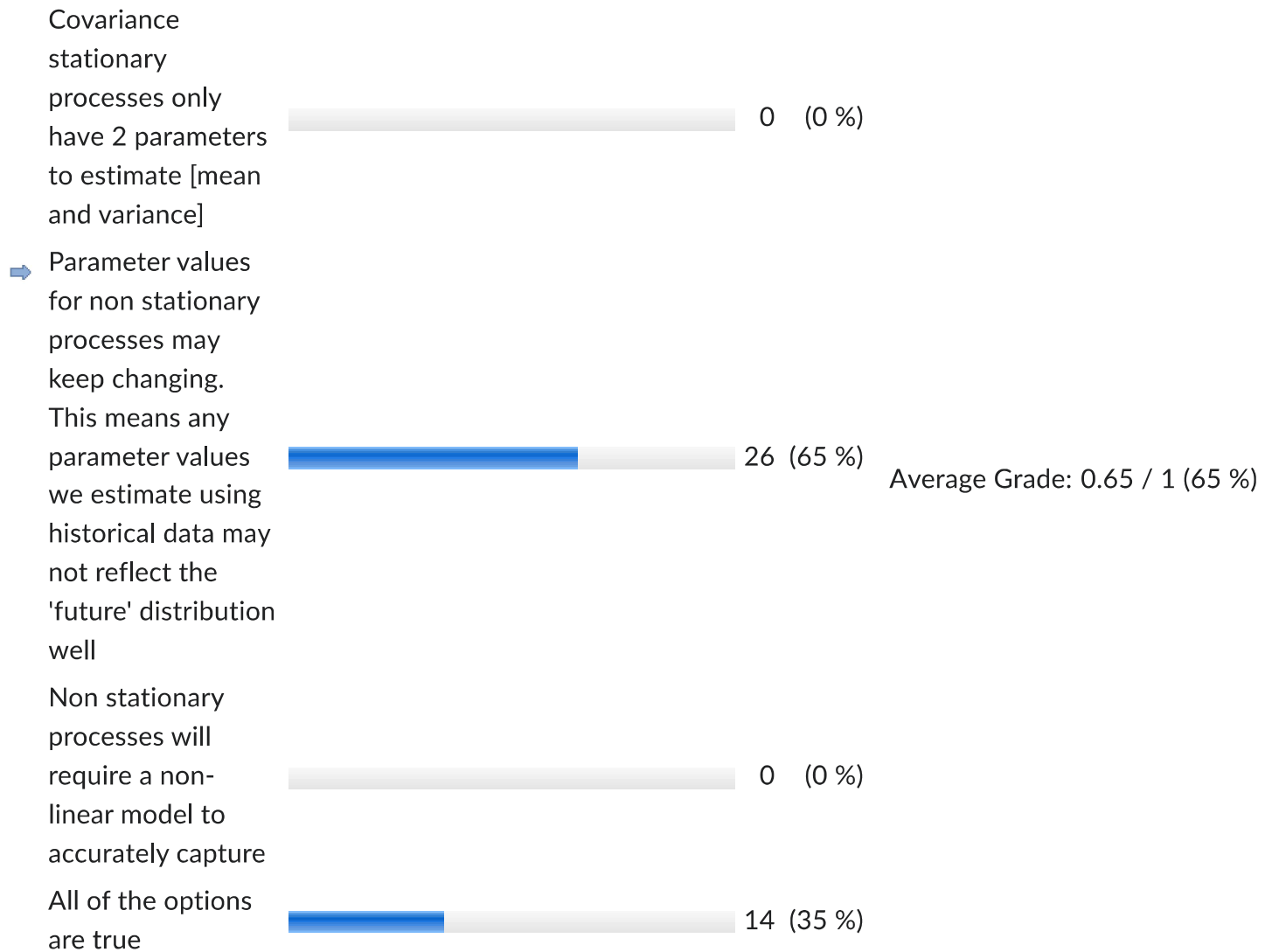
 0 (0 %)

➡ Check if
residuals from a
time series
estimation still
contain time
series
information,
defined as
significant
autocorrelations

 39 (97.5 %)

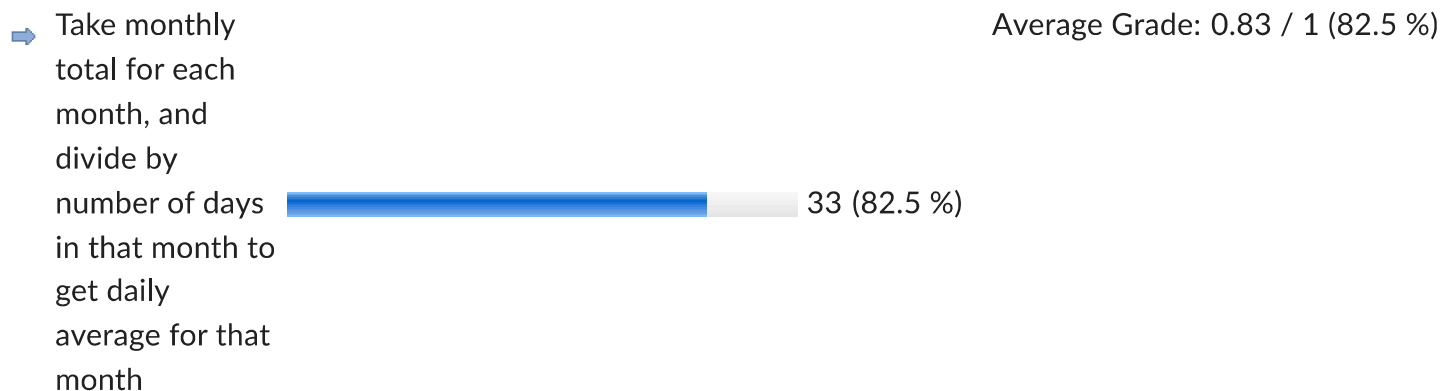
Question 6 Difficulty: 1




Why do we prefer to model covariance stationary processes versus non stationary processes?



Question 7 Difficulty: 1

We find that total monthly natural gas consumption is greater in months January, March, May, July, August, October and December compared to other months. How do we correct for any possible distortion introduced by the calendar before comparing values from one month to the next to identify any possible new demand factors for gas consumption?






Annualize the values		1 (2.5 %)
Use a moving average to study the long term trend of gas consumption, abstracting away from seasonal concerns		6 (15 %)
There is no need to do anything, we can directly compare the raw values		0 (0 %)


Question 8 Difficulty: 1

When we use goodness of fit criteria to evaluate a model [e.g. MAPE, RMSE, etc], how should we execute this?

Average Grade: 0.9 / 1 (90 %)

<p>➡ Focus primarily on a 'hold out' out of sample, which was not used to estimate model's parameter values, and may be (say) 20% of observations</p>		36 (90 %)
<p>Compute these across the entire data sample</p>		0 (0 %)
<p>Compute these across the same data observations that were used to estimate model's parameters</p>		1 (2.5 %)

Focus primarily on a 'hold out' out of sample, which was not used to estimate model's parameter values, and may be (say) 80% of observations

 3 (7.5 %)

Question 9 Difficulty: 1

What is the main way to visualize time series information in a variable?

Simple time series graph of the variable

 22 (55 %)

→ Auto-correlation function (ACF) plot. We can use various patterns in the ACF to hypothesize if there are long term trends, cycles, etc

 18 (45 %)

Average Grade: 0.45 / 1 (45 %)

Plot of the first difference of the variable

 0 (0 %)

Plot of the second difference of the variable

 0 (0 %)

Question 10 Difficulty: 1

What is one way to convert a non stationary time series to stationary?

→ Take the first difference

 36 (90 %)

Average Grade: 0.9 / 1 (90 %)

Apply log() to the time series

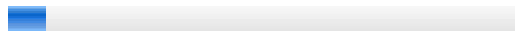
 1 (2.5 %)

Apply a power transformation to the time series

 0 (0 %)


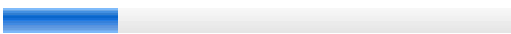


Apply Box-Cox

transformation to
the time series

 3 (7.5 %)



Question 11 Difficulty: 1

What is the correct order to apply seasonal and non seasonal differences?

- Always apply seasonal differences first, then non seasonal differences (if needed)  29 (72.5 %)
- Always apply non-seasonal differences first, then seasonal differences (if needed)  9 (22.5 %) Average Grade: 0.73 / 1 (72.5 %)
- We never need to apply both on the same time series  1 (2.5 %)
- Order is irrelevant  1 (2.5 %)

Question 12 Difficulty: 1

What is purpose of the KPSS test?

- Allows us to determine if a time series is stationary. If not, we can apply seasonal or non seasonal differences and run the test again  37 (92.5 %) Average Grade: 0.93 / 1 (92.5 %)
- Allows us to determine if a  0 (0 %)

time series has a cyclical component. If so, we can apply seasonal or non seasonal differences and run the test again

Allows us to determine if a time series is integrated of order 2 and above

 0 (0 %)

Allows us to determine if a time series is stationary. If not, we cannot use time series analysis and should consider non linear methods such as machine learning

 3 (7.5 %)