View Report

R1

(Number of First Attempts: 90)

MCQ

Question 1

What is the purpose of Box-Cox transformation?

➡ Ensures that 'range' or volatility of data is largely constant before modelling		83	(92.22 %)
Render the data stationary		6	(6.67 %)
Remove the impact of calendar effects		0	(0 %)
Remove the effect of inflation		1	(1.11 %)

Average Grade: 0.92 / 1 (92.22 %)

Question 2

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

Stationary, Non stationary, Stochastic		1	(1.11 %)
Deterministic, Non deterministic		0	(0 %)
➡ Trend, Seasonal, Remainder		88	(97.78 %)
Level, trend, remainder		1	(1.11 %)

Average Grade: 0.98 / 1 (97.78 %)

Question 3

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

➡ Identical across all years	40	(44.94 %)	
Different across years, but changing slowly from one year to the next	17	(19.1 %)	
Different across years, and changing quickly from one year to the next	2	(2.25 %)	Average Grade: 0.44 / 1 (44.44 %)
Identical period but different amplitude across different years	30	(33.71 %)	

Question 4

What is the overall purpose of time series decomposition?

Remove the effect of unpredictable noise from a time series	1	(1.11 %)	
Make it harder to overfit irrelevant parameters to a specific type of time series	0	(0 %)	
➡ Split time series into various components which may be very different from one another, so that each component can be modelled separately	59	(65.56 %)	Average Grade: 0.66 / 1 (65.56 %)
All of the options are valid	30	(33.33 %)	

Question 5

What is purpose of Ljung-Box test?

Check if residuals from a time series estimation still contain time series information, defined as significant noise	0	(0 %)	Average Grade: 1 / 1 (100 %)

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		0	(0 %)
➡ Check if residuals from a time series estimation still contain time series information, defined as significant autocorrelations		90	(100 %)

Question 6

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

Covariance stationary processes only have 2 parameters to estimate [mean and variance]		0	(0 %)
➡ Parameter values for non stationary processes may keep changing. This means any parameter values we estimate using historical data may not reflect the 'future' distribution well		60	(66.67 %)
Non stationary processes will require a non-linear model to accurately capture		0	(0 %)
All of the options are true		30	(33.33 %)

Average Grade: 0.67 / 1 (66.67 %)

Question 7

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?

Take monthly total for each month, and divide by number of days in that month to get daily average for that month	87	(96.67 %)
Annualize the values	1	(1.11 %)
Use a moving average to study the long term trend of gas consumption, abstracting away from seasonal concerns	2	(2.22 %)
There is no need to do anything, we can directly compare the raw values	0	(0 %)

Average Grade: 0.97 / 1 (96.67 %)

Question 8

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

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	86	(95.56 %)
Compute these across the entire data sample	0	(0 %)
Compute these across the same data observations that were used to estimate model's parameters	2	(2.22 %)
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	2	(2.22 %)

Average Grade: 0.96 / 1 (95.56 %)

Question 9

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

	Simple time series graph of the variable	59	(65.56 %)
➡	Auto-correlation function (ACF) plot. We can use various patterns in the ACF to hypothesize if there are long term trends, cycles, etc	31	(34.44 %)
	Plot of the first difference of the variable	0	(0 %)
	Plot of the second difference of the variable	0	(0 %)

Average Grade: 0.34 / 1 (34.44 %)

Question 10

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

➡	Take the first difference	87	(96.67 %)
	Apply log() to the time series	0	(0 %)
	Apply a power transformation to the time series	0	(0 %)
	Apply Box-Cox transformation to the time series	3	(3.33 %)

Average Grade: 0.97 / 1 (96.67 %)

Question 11

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

➡	Always apply seasonal differences first, then non seasonal differences (if needed)	73	(81.11 %)
	Always apply non-seasonal differences first, then seasonal differences (if	17	(18.89 %)

Average Grade: 0.81 / 1 (81.11 %)

needed)

We never need to apply both on the same time series	0	(0 %)
Order is irrelevant	0	(0 %)

Question 12

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	86	(95.56 %)
Allows us to determine if a time series has a cyclical component. If so, we can apply seasonal or non seasonal differences and run the test again	3	(3.33 %)
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	1	(1.11 %)

Average Grade: 0.96 / 1 (95.56 %)