Started on	Tuesday, September 15, 2020, 1:00 PM
State	Finished
Completed on	Tuesday, September 15, 2020, 1:25 PM
Time taken	25 mins 5 secs
Points	98.00/98.00
Grade	**100.00** out of 100.00

Question **1**

Correct

4.00 points out of 4.00

Given the following forecast equation for an ESM, which type of model do you have?

$$\hat{Y}_{t+k} = L_t + S_{t-p+k}$$

Select one:

- a. Additive Seasonal Model ✔
- b. Multiplicative Holt-Winters Model
- c. Additive Holt-Winters Model
- d. Holt Linear Model
- e. Multiplicative Seasonal Model

Your answer is correct.

The correct answer is: Additive Seasonal Model

Question **2**

Correct

4.00 points out of 4.00

A trending series can be stationary.

Select one:

- True
- False ✔

The correct answer is 'False'.

Question **3**

Correct

4.00 points out of 4.00

ESM's are good for one step ahead forecasting.

Select one:

- True ✔
- False

The correct answer is 'True'.

Question 4

Correct

4.00 points out of 4.00

White noise means that the residuals

Select one:

- a. Follow a normal distribution
- b. have a mean of 0
- c. have constant variance
- d. independent
- e. all of the above ✔

Your answer is correct.

The correct answer is: all of the above

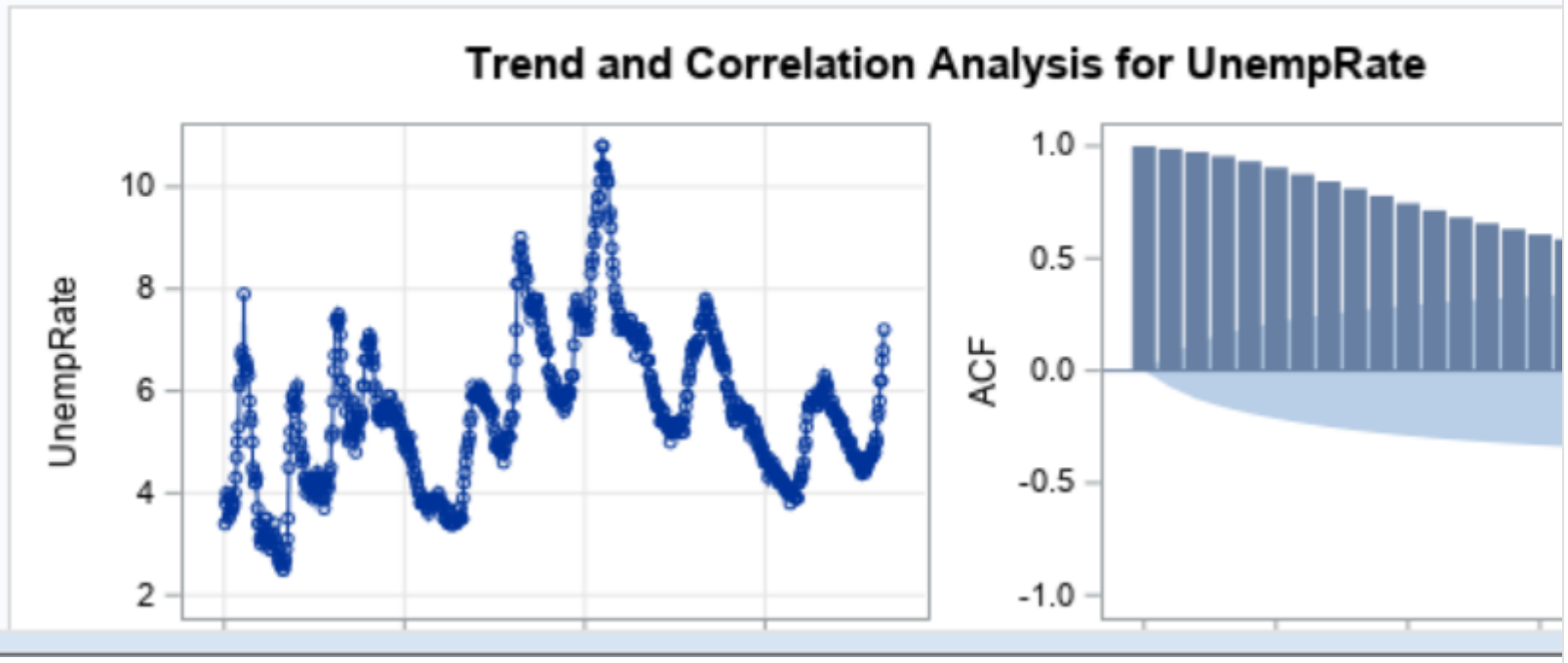
Question 5

Correct

4.00 points out of 4.00

Based on the information provided below, what would be your conclusion?

Type	Lags	Rho	Pr < Rho	Tau	Pr < Tau	F	Pr >
Zero Mean	0	0.0993	0.7061	0.10	0.7143		
	1	-0.0425	0.6732	-0.04	0.6703		
	2	-0.5096	0.5679	-0.35	0.5600		
Single Mean	0	-8.0477	0.2143	-2.08	0.2544	2.37	0.462
	1	-9.2803	0.1596	-2.16	0.2207	2.48	0.435
	2	-16.2452	0.0288	-2.79	0.0605	3.97	0.088
Trend	0	-8.3225	0.5578	-2.09	0.5513	2.20	0.736
	1	-9.7537	0.4523	-2.21	0.4831	2.44	0.686
	2	-17.3118	0.1174	-2.89	0.1658	4.19	0.333



Select one:

- a. Fail to reject H0 and conclude series is stationary about a trend line.
- b. Fail to reject H0 and conclude series is a Random Walk with Drift. ✔
- c. Reject H0 and conclude it is a Random Walk with Drift.
- d. Reject H0 and conclude the series is stationary about a trend.

Your answer is correct.

The correct answer is: Fail to reject H0 and conclude series is a Random Walk with Drift.

Question 6

Correct

4.00 points out of 4.00

An MA(1) model will have one spike at lag 1 on the ACF plot in the raw data.

Select one:

- True ✔
- False

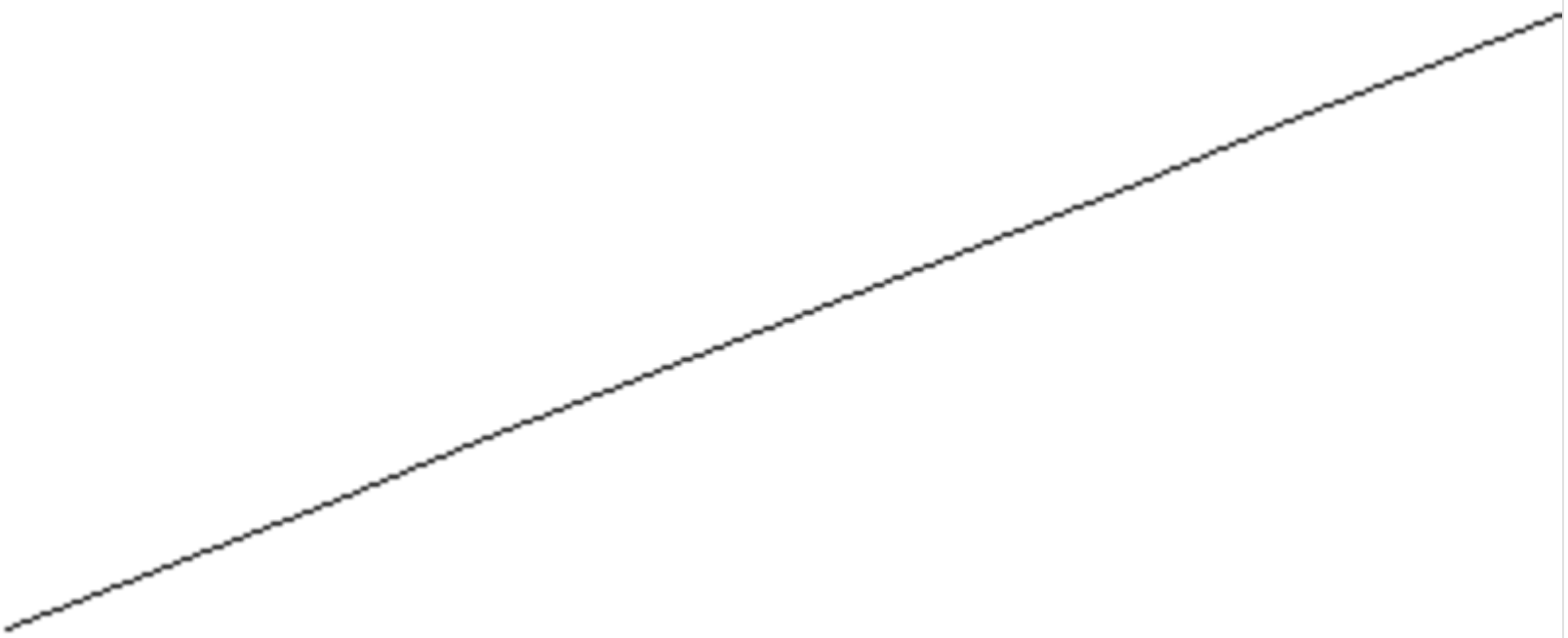
The correct answer is 'True'.

Question 7

Correct

4.00 points out of 4.00

The following graph shows the forecasted values from an ESM. Which ESM was fit?



Select one:

- a. Holt Linear ✔
- b. Additive Seasonal
- c. Multiplicative Seasonal
- d. Single

Your answer is correct.

The correct answer is: Holt Linear

Question 8

Correct

4.00 points out of 4.00

A random walk is a stationary time series.

Select one:

- True
- False ✔

The correct answer is 'False'.

Information

MAPE: $\frac{1}{n}\sum\frac{|Y_t-\hat{Y}_t|}{|Y_t|}$

MAE: $\frac{1}{n}\sum|Y_t-\hat{Y}_t|$

RMSE: $\sqrt{\frac{1}{n}\sum(Y_t-\hat{Y}_t)^2}$

sMAPE: $\frac{1}{n}\sum\frac{|Y_t-\hat{Y}_t|}{|Y_t|+|\hat{Y}_t|}$

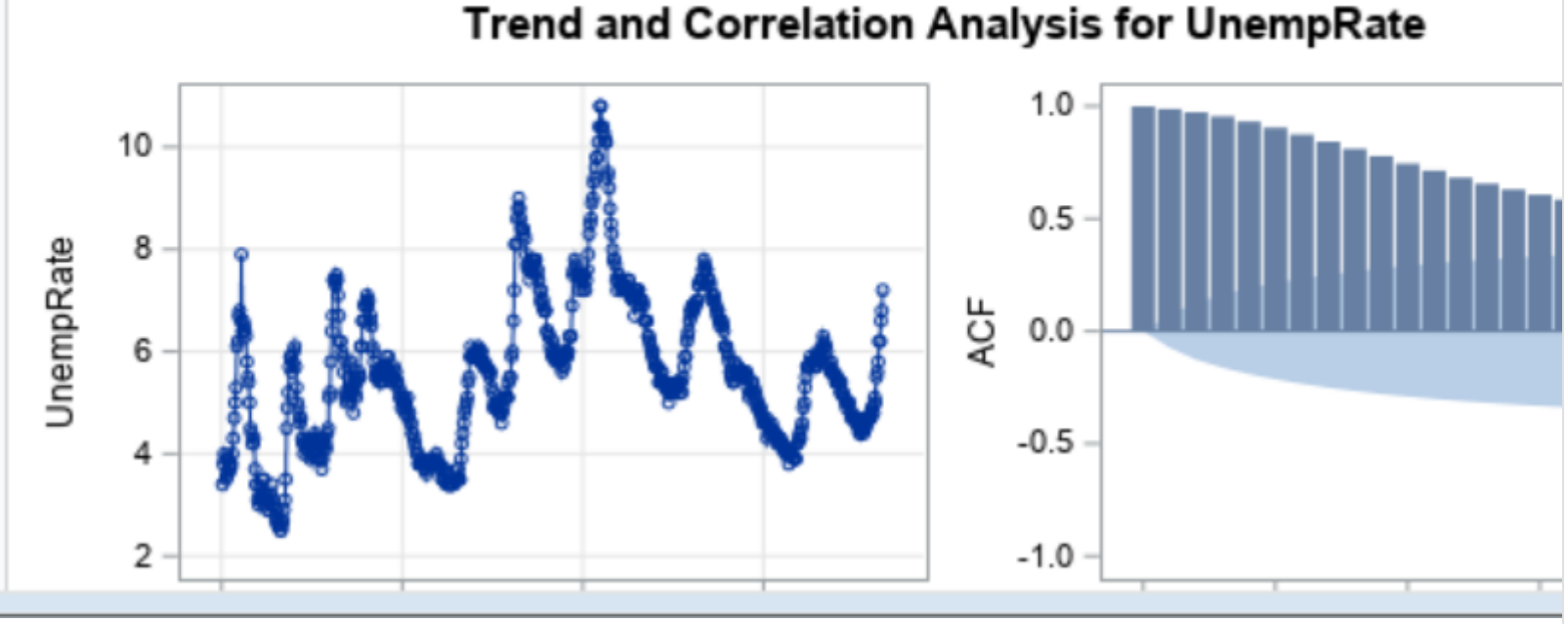
Question 9

Correct

4.00 points out of 4.00

Given the information below, what would you do?

Type	Lags	Rho	Pr < Rho	Tau	Pr < Tau	F	Pr >
Zero Mean	0	0.0993	0.7061	0.10	0.7143		
	1	-0.0425	0.6732	-0.04	0.6703		
	2	-0.5096	0.5679	-0.35	0.5600		
Single Mean	0	-8.0477	0.2143	-2.08	0.2544	2.37	0.462
	1	-9.2803	0.1596	-2.16	0.2207	2.48	0.435
	2	-16.2452	0.0288	-2.79	0.0605	3.97	0.088
Trend	0	-8.3225	0.5578	-2.09	0.5513	2.20	0.736
	1	-9.7537	0.4523	-2.21	0.4831	2.44	0.686
	2	-17.3118	0.1174	-2.89	0.1658	4.19	0.333



Select one:

- a. Look at the p-values for the Trend Augmented Dickey-Fuller Test. ✔
- b. Look at the p-values for the Zero Mean Augmented Dickey-Fuller Test
- c. Need more information.
- d. Use the F-statistics information in the output.

Your answer is correct.

The correct answer is: Look at the p-values for the Trend Augmented Dickey-Fuller Test.

Question 10

Complete

6.00 points out of 6.00

State the null and alternative hypothesis test for the Ljung-Box test.

null: no autocorrelation exists

alternative: autocorrelation with at least one of the lags exists

H0: no autocorrelation

HA: there is autocorrelation

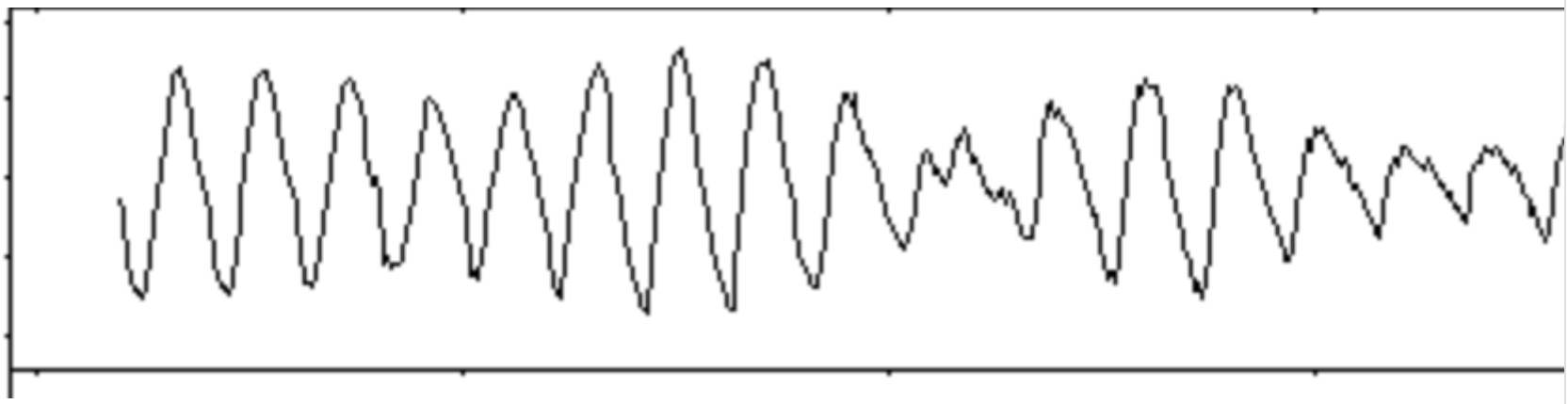
Comment:

Question 11

Correct

4.00 points out of 4.00

The graph shows the seasonal component for a decomposition. What type of decomposition was used to decompose this time time series?



Select one:

- a. Holt Linear
- b. Classical
- c. STL ✔
- d. Holt Winters
- e. None of these choices

Your answer is correct.

The correct answer is: STL

Question 12

Correct

4.00 points out of 4.00

What is needed to have a stationary time series?

Select one:

- a. Independence
- b. Converge to a constant mean and have a constant variance ✔
- c. White noise
- d. All of these.
- e. A and B
- f. A and C

Your answer is correct.

The correct answer is: Converge to a constant mean and have a constant variance

Question 13

Complete

6.00 points out of 6.00

Write out the formula for a Random Walk.

Y(t) = Y(t-1) + e(t)

$Y_t = Y_{t-1} + e_t$

Comment:

Question 14

Correct

4.00 points out of 4.00

What would you expect the PACF plot to look like for a Random Walk?

Select one:

- a. Have multiple spikes throughout numerous lags.
- b. Not enough information.
- c. Have one spike at Lag 1. ✔
- d. There is no pattern.

Your answer is correct.

The correct answer is: Have one spike at Lag 1.

Question 15

Correct

4.00 points out of 4.00

If you need to provide seasonally adjusted data in a multiplicative model, it is easier to use the Classical Decomposition over the STL Decomosition.

Select one:

- True ✔
- False

The correct answer is 'True'.

Question 16

Correct

4.00 points out of 4.00

How many parameters are in a damped trend ESM?

Select one:

- a. 3 ✔
- b. 4
- c. 1
- d. 2

Your answer is correct.

The correct answer is: 3

Question 17

Complete

6.00 points out of 6.00

In which situation would MAPE not be a good measure of accuracy?

Situations where you need to equally weight overpredictions and underpredictions; MAPE overweights overpredictions. Situations when you require an actual value and not a percent or proportion of error (in these situations, consider using MAE)

When there are many forecasted values higher than actual values.

Comment:

Question 18

Correct

4.00 points out of 4.00

Based on the following data, calculate the MAE. Keep answers to two decimal places.

Observation	Predicted
6	3
10	8
12	15

Answer: 2.67 ✔

The correct answer is: 2.67

Question 19

Correct

6.00 points out of 6.00

The following information was obtained from a decomposition:

Yt	Trend	Season	Error
10.3	12	-3.2	1.5

Assuming that this was an additive decomposition, calculate the value for the seasonally adjusted data.

Answer: 13.5 ✔

The correct answer is: 13.5

Question 20

Correct

4.00 points out of 4.00

In a time series data set, we randomly select which observations are in the training data set, the validation data set and the test data set.

Select one:

- True
- False ✔

The correct answer is 'False'.

Question 21

Correct

4.00 points out of 4.00

Match the following items.

RMSE calculated on the holdout data set	Accuracy statistic ✔
AIC and SBC calculated on the training data set	Goodness-of-fit statistic ✔

Your answer is correct.

The correct answer is:

- RMSE calculated on the holdout data set → Accuracy statistic
- AIC and SBC calculated on the training data set → Goodness-of-fit statistic

Question 22

Complete

6.00 points out of 6.00

Write out the equation for an AR(3) model.

Y(t) = omega + phi(1)*y(t-1) + phi(2)*y(t-2) + phi(3)*y(t-3) + e(t)

$Y_t=\omega + \Phi_1 Y_{t-1} + \Phi_2 Y_{t-2}+\Phi_3 Y_{t-3} + e_t$

Comment:

◄ Time Series Review - Module 1

Jump to...

Time Series 2 - Class 1 - September 18 - both ►