View Report

R1

(Number of First Attempts: 91)

MCQ

Question 1

An AR(1) process is Y(t) = 3 + 0.5Y(t-1) + e(t). What is the unconditional mean of the process?

➡ 6	90	(98.9 %)	Average Grade: 0.99 / 1 (98.9 %)
3	0	(0 %)	
0.5	1	(1.1 %)	
0	0	(0 %)	

Question 2

An AR(1) process is Y(t) = 2 + 0.5Y(t-1) + e(t). What is the unconditional variance of the process if variance of the error term is 0.5?

➡ 0.6667	89	(97.8 %)	Average Grade: 0.98 / 1 (97.8 %)
2	1	(1.1 %)	
0.5	1	(1.1 %)	
4	0	(0 %)	

Question 3

An AR(1) process is Y(t) = 2 + 6Y(t-1) + e(t). What is the unconditional mean of the process?

4	1	(1.1 %)	Average Grade: 0.98 / 1 (97.8 %)

0		0	(0 %)
6		1	(1.1 %)
➡ A finite unconditional mean does not exist and process is not stationary		89	(97.8 %)

Question 4

What is the unconditional mean of the following MA(2) process: $Y(t) = 5 + 0.1e(t-1) + 0.2e(t-2) + e(t)$

0.1		0	(0 %)
➡ 5		88	(97.78 %)
50		0	(0 %)
25		2	(2.22 %)

Average Grade: 0.97 / 1 (96.7 %)

Question 5

Which of the following is true of AR(p) and MA(q) processes?

Both AR(p) and MA(q) processes may or may not be covariance stationary depending on coefficients, p and q.		3	(3.3 %)
Both AR(p) and MA(q) processes are never covariance stationary		0	(0 %)
Both AR(p) and MA(q) processes are always covariance stationary		1	(1.1 %)
➡ AR(p) processes may or may not be covariance stationary but MA(q) is always covariance stationary		87	(95.6 %)

Average Grade: 0.96 / 1 (95.6 %)

Question 6

What is a characteristic of ACF for an AR(1)?

Exponentially but smoothly increasing in absolute value as lag k increases	4	(4.4 %)	
Slowly decreasing with lag k up to a certain point, then sharply dropping	0	(0 %)	
➡ Exponentially but smoothly decaying in absolute value as lag k increases	87	(95.6 %)	Average Grade: 0.96 / 1 (95.6 %)
Slowly increasing with lag k up to a certain point, then sharply dropping	0	(0 %)	

Question 7

What is a characteristic of the PACF for AR(3)?

➡ Slowly decreasing in absolute value up to k = 3, then sharply falls towards 0 in absolute value	85	(93.41 %)	
Slowly decreasing in absolute value up to k = 36, then sharply falls towards 0 in absolute value	0	(0 %)	Average Grade: 0.93 / 1 (93.41 %)
Absolute value takes smooth exponential decay towards 0 as lag k increases	0	(0 %)	
None of above	6	(6.59 %)	

Question 8

What is an ARMA(1,2) model?

Simple sum of AR(2) and MA(1) models	1	(1.1 %)	Average Grade: 0.98 / 1 (97.8 %)
➡ Simple sum of AR(1) and MA(2) models	89	(97.8 %)	

Model made up of machine learning algorithm with AR and MA models as inputs		0	(0 %)
Product of AR and MA models of arbitrary order to be determined by automated modelling		1	(1.1 %)

Question 9

What is the use of ACF and PACF for a time series?

We can always use both in conjunction to exactly determine the type of model and order exactly		0	(0 %)
➡ To narrow down possibilities and form educated guesses as to the type and order of time series model (AR/MA/ARMA/ARIMA), and in some simple cases, allow us to directly chose the model type and order		90	(98.9 %)
We can always use ACF to exactly determine the type of model and PACF to determine the order for both AR and MA		0	(0 %)
We can always use PACF to exactly determine the type of model and ACF to determine the order for both AR and MA		1	(1.1 %)

Average Grade: 0.99 / 1 (98.9 %)

Question 10

What is the ARIMA model?

➡	Take one or more differences on variable to make it stationary, then estimate an ARMA model on (possibly differenced) variable		91	(100 %)
	Estimate an ARMA model on raw variable		0	(0 %)
	Recursively estimate AR or MA models on a raw variable, taking the result of each step as the input to the next		0	(0 %)
	None of above		0	(0 %)

Average Grade: 1 / 1 (100 %)

Question 11

Residuals in a time series estimation (AR, MA, ARMA, ARIMA) should have what properties?

	Mean = 0		1	(1.1 %)
	Constant variance		1	(1.1 %)
	Zero autocorrelation		0	(0 %)
➡	All of the above		89	(97.8 %)

Average Grade: 0.98 / 1 (97.8 %)

Question 12

A very extremely slowly decaying ACF without any seasonal patterns is a clear and obvious indication of which of the following?

➡	Long term directional trend in the data; data is not stationary and likely requires one or more differences		89	(97.8 %)
	Seasonality in the data		2	(2.2 %)
	Underlying variable is close to stationary		0	(0 %)
	Underlying variable is white noise		0	(0 %)

Average Grade: 0.98 / 1 (97.8 %)

Question 13

An MA(1) process is Y(t) = 10 + 0.5e(t-1) + e(t). What is the autocorrelation between Y(t) and Y(t-10)?

➡ 0		88	(96.7 %)
0.5		1	(1.1 %)
0.6		0	(0 %)
None of above		2	(2.2 %)

Average Grade: 0.97 / 1 (96.7 %)

Question 14

An AR(1) process is Y(t) = 1 + 0.1Y(t-1) + e(t). What is the autocorrelation between Y(t) and Y(t-5)?

➡ 0.1 to the power of 5		88	(96.7 %)
0.1		0	(0 %)
(1-0.1) to the power of 5		1	(1.1 %)
1		2	(2.2 %)

Average Grade: 0.97 / 1 (96.7 %)