

View Report

R1

(Number of First Attempts: 40)

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	<div><div></div></div>	37 (92.5 %)	Average Grade: 0.93 / 1 (92.5 %)
3	<div><div></div></div>	3 (7.5 %)	
0.5	<div><div></div></div>	0 (0 %)	
0	<div><div></div></div>	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	<div><div></div></div>	35 (87.5 %)	Average Grade: 0.88 / 1 (87.5 %)
2	<div><div></div></div>	2 (5 %)	
0.5	<div><div></div></div>	2 (5 %)	
4	<div><div></div></div>	1 (2.5 %)	

Question 3

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

4	<div><div></div></div>	0 (0 %)	Average Grade: 0.98 / 1 (97.5 %)
0	<div><div></div></div>	1 (2.5 %)	
6	<div><div></div></div>	0 (0 %)	
→ A finite unconditional mean does not exist and process is not stationary	<div><div></div></div>	39 (97.5 %)	

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	<div><div></div></div>	0 (0 %)	Average Grade: 1 / 1 (100 %)
→ 5	<div><div></div></div>	40 (100 %)	

50

0 (0 %)

25

0 (0 %)

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.

11 (27.5 %)

Both AR(p) and MA(q) processes are never covariance stationary

0 (0 %)

Average Grade: 0.73 / 1 (72.5 %)

Both AR(p) and MA(q) processes are always covariance stationary

0 (0 %)

➡ AR(p) processes may or may not be covariance stationary but MA(q) is always covariance stationary

29 (72.5 %)

Question 6

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

Exponentially but smoothly increasing in absolute value as lag k increases

Average Grade: 0.98 / 1 (97.5 %)

1 (2.5 %)


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

39 (97.5 %)

Slowly increasing
with lag k up to a
certain point, then
sharply dropping

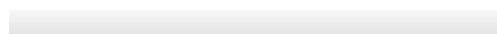
 0 (0 %)

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  37 (92.5 %)

Slowly decreasing in
absolute value up to
 $k = 36$, then sharply
falls towards 0 in
absolute value

 0 (0 %) Average Grade: 0.93 / 1 (92.5 %)

Absolute value takes
smooth exponential
decay towards 0 as
lag k increases

 1 (2.5 %)

None of above

 2 (5 %)

Question 8

What is an ARMA(1,2) model?

Simple sum of AR(2)
and MA(1) models  1 (2.5 %)

➡ Simple sum of AR(1)
and MA(2) models  39 (97.5 %)

Model made up of
machine learning
algorithm with AR
and MA models as
inputs

 0 (0 %)





Average Grade: 0.98 / 1 (97.5 %)

Product of AR and
MA models of
arbitrary order to be
determined by
automated
modelling

 0 (0 %)

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  2 (5 %)
- ➡ 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  34 (85 %)
- We can always use ACF to exactly determine the type of model and PACF to determine the order for both AR and MA  4 (10 %)
- We can always use PACF to exactly determine the type of model and ACF to determine the order for both AR and MA  0 (0 %)

Average Grade: 0.85 / 1 (85 %)

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  37 (92.5 %)
- Estimate an ARMA model on raw variable  1 (2.5 %)
- Recursively estimate AR or MA models on a raw variable, taking the result of each  1 (2.5 %)


Average Grade: 0.93 / 1 (92.5 %)

step as the input to
the next

None of above  1 (2.5 %)

Question 11

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

Mean = 0  0 (0 %)

Constant variance  2 (5 %)

Zero autocorrelation  1 (2.5 %)

Average Grade: 0.93 / 1 (92.5 %)

→ All of the above  37 (92.5 %)

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  40 (100 %)

Seasonality in the data  0 (0 %)

Average Grade: 1 / 1 (100 %)

Underlying variable is close to stationary  0 (0 %)

Underlying variable is white noise  0 (0 %)

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  35 (87.5 %)

0.5  1 (2.5 %)

0.6  0 (0 %)

None of above  4 (10 %)

Average Grade: 0.88 / 1 (87.5 %)

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  35 (87.5 %)

Average Grade: 0.88 / 1 (87.5 %)

0.1  1 (2.5 %)

(1-0.1) to the power
of 5



4 (10 %)

1



0 (0 %)