Family Name _____

First Name _____

Student Number |__|__|__|__|__|__|__|__|

Venue _____

Seat Number _____

No electronic/comn~~~~~~~~~ices are permitted.

No exam materials may be removed from the exam room.

Mathematics and Statistics

EXAMINATION

End-of-year Examinations, 2017

STAT317-17S2 (C) Time Series Methods

STAT456-17S2 (C) Time Series and Stochastic Processes

ECON323-17S2 (C) Time Series Methods

Examination Duration: 120 minutes

Exam Conditions:

Restricted Book exam: Approved materials only.

Calculators with a 'UC' sticker approved.

Materials Permitted in the Exam Venue:

Restricted Book exam materials.

One A4 double-sided, hand-written, sheet of notes.

Materials to be Supplied to Students:

1 x Standard 16-page UC answer book

Instructions to Students:

Answer all SIX questions

Use black or blue ink only.

Show all working.

Write your answers in the answer booklet provided.

程序代写代做 CS编程辅导

WeChat: cstutorcs

Questions Start on Page 3

Assignment Project Exam Help

Email: tutorcs@163.com

QQ: 749389476

https://tutorcs.com

1. [**9 marks**] Give the definitions of the following concepts.

   (a) Weak white noise

   (b) Random

   (c) Weakly s

2. [**9 marks**] Ar   cesses stationary or not? Give reasons for your answer.

   (a) Random

   (b) The AR(1) process $X_t = \frac{5}{3}X_{t-1} + W_t$

   (c) Log-exchange rate of NZD and USD

3. [**9 marks**] Assume you observe a time series X_t and there seems to be a trend in the series that looks like a quadratic function.

   (a) Write down a regression model for the quadratic trend.

   (b) Extend the regression model in a way that it can account for seasonality that repeats after four observations. Point out how all four seasonal components can be estimated with your model. Explain in one or two sentences what might go wrong if such a model is written down in a naive way.

4. [**8 marks**] Please explain the relationship between the Wold's decomposition and the the ARMA models.

5. [**8 marks**] Consider the model

$$X_t = \ldots X_{t-1} + 0.4X_{t-2} + \epsilon_t$$

where ϵ_t is a white noise with mean 0 and variance 4.

  (a) Give the numeric value of the autocovariance functions, $\gamma(0)$, $\gamma(1)$ and $\gamma(2)$ given the actual value of the parameters.

  (b) Give the numeric value of the autocorrelation functions, $\rho(0)$, $\rho(1)$ and $\rho(2)$.

6. [**8 marks**] Show how an AR(1) can be seen as an infinite MA and and how an MA(1) can be seen as an infinite AR.

End of Examination