Unit 8 - Week 3: Introduction to Random Processes, Auto- and Cross-Correlation Functions

Week 3 Assignment

The due date for submitting this assignment has passed. **Due on 2018-02-14, 23:59 IST.**

As per our records you have not submitted this assignment.

1)  
   - Yes
   - No

   **No, the answer is incorrect.**  
   **Score: 0**

   **Accepted Answers:**
   - No

2)  
   - Quadratic trend and periodicity
   - Stationarity
   - Linear trend
   - Quadratic trend only

   **No, the answer is incorrect.**  
   **Score: 0**

   **Accepted Answers:**
   - Quadratic trend only

3) Non-negative definiteness of ACVF for a stochastic process implies  
   - ACVF values are always positive-valued
   - Periodicity of that process
   - Spectral distribution is guaranteed to exist
   - ACVF is non-zero at all non-negative lags

   **No, the answer is incorrect.**  
   **Score: 0**

   **Accepted Answers:**
   - *Spectral distribution is guaranteed to exist*

4)
A process generates a sinusoidal wave, which is observed with error, \( v[k] = A \cos(2\pi f_0 k) + e[k] \). Where \( e[k] \) is the usual zero-mean, unit-variance white noise sequence, and \( A, f_0 \) are suitable constants. For this process, the sample covariance function given by

\[
R_{vv}[l] = \frac{1}{N} \sum_{k=1}^{N} (v[k] - \bar{v})(v[k - l] - \bar{v})
\]

is asymptotically (large samples, \( N \to \infty \)) periodic. Then the frequency of \( R_{vv}[l] \) is ___________.

- \( f_0 \)
- \( 0 \)

No, the answer is incorrect.
Score: 0
Accepted Answers:

5) For the series given in w3_q5.Rdata, what would be an appropriate model to build?

- No model possible
- AR model
- MA model
- ARMA model

No, the answer is incorrect.
Score: 0
Accepted Answers:

6) No model possible

7) No, the answer is incorrect.
Score: 0
Accepted Answers:

8)
No, the answer is incorrect.
Score: 0
Accepted Answers:

9)

- Yes
- No

No, the answer is incorrect.
Score: 0
Accepted Answers:
Yes

10) Which of the following sets of characteristics would usually best describe an AR(3) process?

- An exponentially decay in ACF and abrupt cut-off in PACF beyond lag 3
- An exponentially decay in PACF and abrupt cut-off in ACF beyond lag 3
- An exponentially decay in both ACF and PACF
- Abrupt cut-off in both ACF and PACF beyond lag 3

No, the answer is incorrect.
Score: 0
Accepted Answers:
An exponentially decay in ACF and abrupt cut-off in PACF beyond lag 3