Quiz 10

This is a preview of the published version of the quiz

Started: Jun 22 at 9:13pm

Quiz Instructions

Question 1 1 pts

If customers arrive at a coffee shop follows homogenous Poisson Process, then the distribution of inter-arrival times between two customers follows which distribution?

- Chi-square distribution.
- Exponential distribution.
- Poisson distribution.
- Normal distribution.

Question 2 1 pts

If X(t) is the number of Rice students logged in Esther at any time t. Then X(t) is a:

- Continuous stochastic process continuous in time.
- Discrete random variable.

Continuous random variable.

Discrete stochastic process continuous in time.

Question 3 1 pts

Which of the following statement is true about an equilibrium distribution of a Markov chain?

The equilibrium distribution depends on the initial distribution.

If an equilibrium distribution exits, it must be unique.

Every Markov chain has a equilibrium distribution.

An equilibrium distribution must be a steady state distribution.

Question 4 1 pts

For discrete-time stochastic processes X_t, the following property is known as:

$$f(x_t \mid x_{t-1}, x_{t-2}, \cdots x_1, x_0) = f(x_t \mid x_{t-1})$$

Homogeneous.

Ergodic.

Markov.

Stationary.

Question 5 1 pts

The following is the transition probability matrix for a homogenous Markov chain. Which of the following is a steady-state distribution?

$$P = \begin{pmatrix} 1-a, & a \\ b, & 1-b \end{pmatrix},\ 0 < a < 1,\ 0 < b < 1$$

1. $\pi_{\{stat\}} = \left(\frac{a}{a+b}, \frac{b}{a+b}\right)$

2. $\pi_{\{stat\}} = \left(\frac{b}{a+b}, \frac{a}{a+b}\right)$

Neither 1 or 2.

Both 1 and 2.

Only 2.

Only 1.

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