

資格考試科目：高等計算機網路

1. Stochastic Process (15%)
  - (a) Please describe the following properties, Independent Increment and Stationary Increment.
  - (b) Define a Stochastic Process that has neither independent nor stationary increments.
2. What is PASTA (Poisson Arrivals see Time Averages)? Please give a counter example for PASTA. (10%)
3. Stopping Times and Wald's Theorem (20%)
  - (a) Please formally define Stopping Times.
  - (b) Please give an example for Stopping Times.
  - (c) How Stopping Times are applied to Wald's Theorem?
4. Flow Control and Congestion Control (20%)
  - (a) What is the difference between the flow control and the congestion control?
  - (b) In terms of delay and maximum achievable throughput, please explain why the congestion control is important for the Internet.
  - (c) How does TCP use AIMD (additive-increase, multiplicative-decrease) to achieve congestion control? (Please describe the two phases of AIMD clearly)
5. Please compare the public-key and symmetric-key (as detailed as possible) for network security. (10%)
6. Wireless and Mobile Networks: (25%)
  - (a) Please describe three "unique" wireless link characteristics.
  - (b) Please elaborate on the relationship among SNR, BER and PHY.
  - (c) What is "hidden terminal" problem?
  - (d) How does 802.11 MAC solve the hidden terminal problem?