Stochastic Processes, Quiz 1, 2024 Spring

- Duration: 60 minutes
- Closed material, No calculator

- Name: ______________________
- Student ID: ______________________
- E-mail: ______________ `@seoultech.ac.kr`

- Write legibly.
- Justification is necessary unless stated otherwise.

1	20
2	10
3	20
Total	50

#1. Consider a random variable X that follows a uniform distribution with parameter 2 and 3. That is, $X \sim U(2,3)$.

(a) State its pdf `[5pts]`

(b) Find its standard deviation. Justification is necessary.[1] `[10pts]`

(c) What is its coefficient of variation of X? `[5pts]`

[1]Hint: For a continuous random variable X, $Var(X) = \mathbb{E}X^2 - (\mathbb{E}X)^2$. $sd(X) = \sqrt{Var(X)}$

#2. Let X be an exponential distribution with parameter 5, i.e. $X \sim exp(5)$. Evaluate $\mathbb{E}[min(X, 3)]$ [10pts]

#3. Let X be a Poisson distribution with parameter 4, i.e. $X \sim Poi(4)$.

(a) State its pmf `[10pts]`

(b) Let $Y = max(X, 3)$. State its pmf. `[10pts]`