Quiz: Probability and Statistics (40 Marks)

Each question: 10 marks

1. Let X be a Uniform $U[a, b]$ random variable. Let $Y = e^{2X}$. Find pdf and cdf of Y.
2. Let X be a Binomial random variable with parameters n and p. Derive expression for the first two moments of X.
3. Define the following : 1) A random variable 2) Borel sigma algebra. For a random variable X describe all possible relationships between $\mathbb{P}, P_X$ and $F_X(\cdot)$.
4. Derive the expression for the mean of an exponential random variable with parameter λ. Also prove the memoryless property for the exponential random variable.