# Department of Mathematics and Statistics KFUPM
# STAT 302-02 Quiz#1, Time: 40 mins

Student's Name: _____ ID: _____

Q.No.1:- Let $Y_1, Y_2, \dots\dots, Y_n$ be independent, exponentially distributed random variables with mean $\beta$.

a. Show that $Y_{(1)} = \min(Y_1, Y_2, \dots\dots, Y_n)$ has an exponential distribution, with mean $\beta/n$.

b. If $n = 5$ and $\beta = 2$, find $P(Y_{(1)} \leq 3.6)$.

Q.No.2:- Let $Y_1$ and $Y_2$ be independent and uniformly distributed over the interval $(0,1)$. Find $P(2Y_{(1)} < Y_{(2)})$.

Continuous Uniform Distribution: $f(x) = \frac{1}{x_n - x_1}$; $x_1 \leq x \leq x_n$; $\mu = \frac{x_n + x_1}{2}$; $\sigma^2 = \frac{(x_n - x_1)^2}{12}$

Exponential Distribution: $f(x) = \lambda e^{-\lambda x}$; $x > 0$; $\mu = \frac{1}{\lambda}$; $\sigma^2 = \frac{1}{\lambda^2}$