MEEN 382 Basic Measurements
Exam 1 Formula Sheet

$$N = \sum_{i=0}^{n-1} d_i b^i$$

$$e = x_i - x_t$$

$$e_s = x_{avg} - x_t$$

$$e_r = \left| x_i - x_{avg} \right|$$

$$s = \frac{d(output)}{d(input)} = \frac{\Delta(output)}{\Delta(input)}$$

$$\overline{x} = \frac{x_1 + x_2 + \cdots + x_n}{n} = \sum_{i=1}^{n} \frac{x_i}{n}$$

$$\mu = \sum_{i=1}^{N} \frac{x_i}{N}$$

$$d_i = x_i - \overline{x}$$

$$S = \sqrt{\sum_{i=1}^{n} \frac{(x_i - \overline{x})^2}{n-1}}$$

$$\sigma = \sqrt{\sum_{i=1}^{N} \frac{(x_i - \mu)^2}{N}}$$

$$P(A\ or\ B) = P(A) + P(B)$$

$$P(AB) = P(A) \cdot P(B)$$

$$P(A \cup B) = P(A) + P(B) - P(A) \cdot P(B)$$

$$\sum_{i=1}^{n} P(x_i) = 1$$

$$\mu = \sum_{i=1}^{N} x_i P(x_i)$$

$$P(a \le x \le b) = \int_a^b f(x)dx$$

$$\mu = \int_{-\infty}^{\infty} x f(x) dx$$

$$P(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

$$P(z) = \frac{1}{\sqrt{2pi}} e^{-\frac{z^2}{2}}$$