

**Probability & Statistics**  
**Quiz #3**  
**Total Marks: 10 marks (CLO-2)**

**3.42** Let  $X$  and  $Y$  denote the lengths of life, in years, of two components in an electronic system. If the joint density function of these variables is

$$f(x, y) = \begin{cases} e^{-(x+y)}, & x > 0, y > 0, \\ 0, & \text{elsewhere,} \end{cases}$$

find  $P(0 < X < 1 \mid Y = 2)$ .