

97. Let T_1 and T_2 represent the lifetimes in hours of two linked components in an electronic device. The joint density function for T_1 and T_2 is uniform over the region defined by $0 \leq t_1 \leq t_2 \leq L$ where L is a positive constant.

Determine the expected value of the sum of the squares of T_1 and T_2 .

- (A) $\frac{L^2}{3}$
- (B) $\frac{L^2}{2}$
- (C) $\frac{2L^2}{3}$
- (D) $\frac{3L^2}{4}$
- (E) L^2