

考 試 科 目	統計學	系 所 別	風險管理與保險學系管理組	考 試 時 間	2 月 5 日(五)第 4 節
<p>1. Assume Y is a random variable that follows a Poisson distribution with a mean of t. The parameter t is itself a random variable that follows an exponential distribution with a mean of 1. Find $P\{Y = n\}$. (15%)</p> <p>2. Suppose that the score of a final exam come from a class with a mean score of 70 and a variance of 25. What is a diagnostically meaningful cutoff if you want to identify the students who score in the highest 5% of the class? ($z_{0.05} = 1.645$; $z_{0.025} = 1.96$; $z_{0.0099} = 2.33$) (10%)</p> <p>3. Suppose that T_1 and T_2 are random variables and have the joint density function given by</p> $f(t_1, t_2) = 2t_1, \quad 0 \leq t_1 \leq 1, \quad 0 \leq t_2 \leq 1$ $f(t_1, t_2) = 0, \quad \text{otherwise}$ <p>(1) Find $E(T_1 T_2)$. (10%)</p> <p>(2) Find $\text{Var}(T_1)$. (15%)</p> <p>4. The correlation coefficient between study hours and grades of 18 examinees is 0.6.</p> <p>(1) What percentage of the variation in grades can be explained by the study hours of the examinees? (10%)</p> <p>(2) Is there statistical evidence at the significance level of 0.05 to claim that study hours and grades are positively correlated? ($t_{20, 0.05} = 1.725$; $t_{20, 0.025} = 2.086$; $t_{18, 0.05} = 1.734$; $t_{18, 0.025} = 2.101$; $t_{16, 0.05} = 1.746$; $t_{16, 0.025} = 2.120$) (15%)</p> <p>5. Suppose that there are five identical bowls, which are labeled 1, 2, 3, 4 and 5. Bowl t contains t red and $5-t$ blue balls, with $t = 1, 2, 3, 4$ and 5. A bowl is randomly chosen and two balls are randomly selected without replacement from the contents of the bowl.</p> <p>(1) Find the probability that the two balls selected are both red? (10%)</p> <p>(2) Given that both balls selected are red, find the probability that bowl 3 was chosen? (15%)</p>					
備 註	<p>一、作答於試題上者，不予計分。</p> <p>二、試題請隨卷繳交。</p>				