

中原大學 97 學年度碩士班入學考試

4 月 13 日 14:00~15:30 應用數學系統計組

誠實是我們珍視的美德，
我們喜愛「拒絕作弊，堅守正直」的你！

科目：機率

(共 1 頁第 1 頁)

可使用計算機，惟僅限不具可程式及多重記憶者

不可使用計算機

- Let X and Y be independent random variables each geometrically distributed with parameter p .
 - (10 points) Find the distribution of $\min(X, Y)$.
 - (10 points) Find $P(Y \geq X)$.
 - (10 points) Find the distribution of $X+Y$.
 - (10 points) Find $P(Y=y|X+Y=z)$ for $y=0,1,2,\dots,z$.
- (20 points) Let X and Y be independent random variables each having the normal density $N(0, \sigma^2)$. Find the density of $X+Y$ and X^2+Y^2 .
- From a lot containing 25 items, 5 of which are defective, 4 are chosen at random. Let X be the number of defective found. Obtain the probability distribution of X if
 - (10 points) the items are chosen with replacement
 - (10 points) the items are chosen without replacement.
- (10 points) If X , Y , and Z are uncorrelated random variable with standard deviation 5, 12, and 9, respectively and if $U=X+Y$ and $V=Y+Z$, evaluate the correlation coefficient between U and V .
- (10 points) If X has a Poisson distribution with parameter β , and if $P(X=0)=0.2$, evaluate $P(X>2)$.