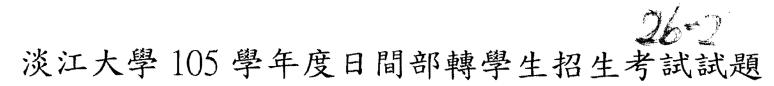
j	系别:統計學系三年級 科目:統計與機率
	考試日期:7月22日(星期五) 第1節 本試題共 6 大題, 2
	第 一 題(8 分) 是非題。下列敘述,正確的請答○;錯誤的請答× ,不用說明理由。
	走非過。「列叙述「正確的調答(), 通訊的調答(), 「和 の (), 如 (), 1. (4分) 令 $\alpha = P(\text{Type I error})$ 和 $\beta = P(\text{Type II error})$, 則 $\alpha + \beta = 1$ 恆成立。
	2. (4 分) 假設 $X_1,, X_n$ 為來自 $N(\mu, 1)$ 的一組隨機樣本,考慮假設檢定問 $H_0: \mu \le \mu_0$ v.s. $H_1: \mu > \mu_0$,若危險域 $C = \{\bar{x} > k\}$,則當 k 越大時,可使 ty I error 和 type II error 發生的機率同時減小。
	第二題(24分)
	選擇題,答題時題號請標示清楚。
	A manufacturer has three production lines A, B, and C. The manager observed t quantity of output in 4, 4, and 3 days for A, B, and C, respectively, and the mean value
	of output are 6.75, 8.75, and 14. The manager constructed the following ANOVA tab
	Sum of Degrees of Mean
	$\begin{array}{c cccc} Variation & squares & freedom & square & F \\ \hline Between & (a) & (c) & 46.6137 & (e) \\ \end{array}$
	Between (a) (c) 46.6137 (e) Within (b) (d) 0.9375 Total 10
	1. $(4 分)$ What is the value of (a)?
	(A) 93.2274 (B) 139.8411 (C) 46.6137 (D) None of the above
	2. $(4 分)$ What is the value of (b)?
	(A) 8.4375 (B) 6.5625 (C) 7.5000 (D) 5.6250
	3. $(4 分)$ What is the value of (c)?
	 (A) 1 (B) 2 (C) 3 (D) 4 4. (4 分) What is the value of (d)?
	(A) 7 (B) 8 (C) 9 (D) 10
	5. $(4 分)$ What is the value of (e)?
	(A) 7.1030 (B) 21.3091 (C) 12.4437 (D) 49.7213
	6. $(4 \ \Re)$ At $\alpha = 0.05$, is there enough evidence to conclude that at least one of
	mean output is different from the others? (Hint: $F_{0.05(2,8)} = 4.46$) (A) There is enough evidence to conclude that at least one of the mean output
	is different from the others.
	(B) There is not enough evidence to conclude that at least one of the matrix
•	
•	output is different from the others. (C) There is too few evidence to conclude that at least one of the mean out



考試日期:7月22日(星期五) 第1節 本試題共 6 大型 第 三 題 (8 分) 選擇題、答題時題號請標示清楚。 Give $P(A) = 0.5$ and $P(A \cup B) = 0.7$. 1. (4 分) What is $P(B)$ if A and B are independent? (A) 0.2 (B) 0.3 (C) 0.4 (D) 0.5 2. (4 分) What is $P(B)$ if A and B are disjoint? (A) 0.2 (B) 0.3 (C) 0.4 (D) 0.5 第 四 題 (12 分) Let discrete random variable X have probability distribution $f(x) = \begin{cases} \frac{ x }{10} & \text{for } x = -3, -2, 2, 3\\ 0 & \text{elsewhere.} \end{cases}$ 1. (6 分) Find $E(X)$. 2. (6 分) Obtain $E(X^2)$. 第 五 題 (24 分) Suppose that the distribution of a random variable X is $f(x) = \begin{cases} e^{-x}, x > 0, \\ 0, & \text{elsewhere.} \end{cases}$ 1. (6 分) Show that f is, indeed, a p.d.f. 2. (6 分) Obtain the m.g.f. of X. 3. (6 分) Find the expectation of $2X + 1$. 4. (6 分) Find the median of X. 第 六 題 (24 分) Let the random variables X_1 and X_2 have joint p.d.f. given by $f(x_1, x_2) = \begin{cases} 1, & 0 < x_1 < 1, 0 < x_2 < 1, \\ 0, & \text{elsewhere.} \end{cases}$	
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0, elsewhere.	
1. (6 \Re) Show that X_1 and X_2 are independent.	
2. (6 \Re) Are X_1 and X_2 uncorrelated? Why?	
3. (6 3) Compute $P(X_1 + X_2 < \frac{1}{3})$.	
4. (6 3) Obtain $P(X_1X_2 > \frac{1}{2})$.	