

# 中央大學八十九學年度碩士班研究生入學試題卷

資訊管理學系 甲乙組 科目:

統計學

共 2 頁 第 1 頁

1. Please state the three assumptions in using ANOVA. Please also describe how to do when the assumptions are violated. (10%)
2. In a two-factor ANOVA, how do you interpret the following situation: (10%)
  - a. Significant interaction effects but nonsignificant main effects
  - b. Both main and interaction effects are significant
3. At freshman student orientation last fall, individual faculty members presented small groups with information concerning the different academic majors at the college. At the end of the presentation, each student was asked to identify a preference for academic major. Although the faculty members were trained to be objective, there is some concern that the faculty may have presented biased information to make their own academic areas appear more interesting. To determine whether there is a relation between student choices and faculty affiliation, the following distribution was constructed. Based on these data, what conclusion can you make? Test at the .05 level of significance. (10%)

		STUDENT CHOICE		
		Science	Social Science	Arts
FACULTY AFFILIATION	Science	24	12	3
	Social Science	20	30	10
	ARTS	15	12	21

4. 說明分層抽樣 (Stratified random sampling) 與 叢集抽樣 (cluster sampling) 的異同及適用時機 (10%)
5. 經濟理論假設個人消費支出水準受其可支配所得影響，今隨機抽樣收集五位納稅義務人之個人消費支出水準及其可支配所得如下:

個人消費支出水準	36	80	44	55	35
可支配所得	9	15	10	11	10

請填入下列表格所有空格後，再以迴歸分析模式在顯著水準 0.05 下檢定此假設，並列出所有的假說陳述及計算過程。(20%)

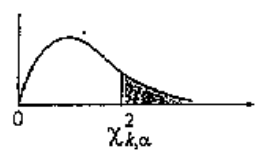
The regression equation is  
 $Y = -34.5 + (a)X + \text{error}$

Predictor	Coef.	Stdev	t-ratio	P-value
Constant	-34.5	12.62	(b)	0.072
X	(c)	1.127	(d)	0.006

$S = (e)$       $R^2 = (f)$       $\text{Adj } R^2 = 91.9\%$

Source	DF	SS	MS	F
Regression	(g)	1298.2	(h)	(i)
Error	(j)	(k)	27.9	
Total	(l)	(m)		

卡方分配表



$P(\chi_k^2 \geq \chi_{k,\alpha}^2) = \alpha$

df	單尾顯著水準							
	0.99	0.975	0.95	0.9	0.1	0.05	0.025	0.01
1	0.0002	0.0010	0.0039	0.0158	2.7055	3.8415	5.0239	6.6349
2	0.0201	0.0506	0.1026	0.2107	4.6052	5.9915	7.3778	9.2103
3	0.1148	0.2158	0.3518	0.5844	6.2514	7.8147	9.3484	11.3449
4	0.2971	0.4844	0.7107	1.0636	7.7794	9.4877	11.1433	13.2767
5	0.5543	0.8312	1.1455	1.6103	9.2364	11.0705	12.8325	15.0863
6	0.8721	1.2373	1.6354	2.2041	10.6446	12.5916	14.4494	16.8119
7	1.2390	1.6899	2.1674	2.8331	12.0170	14.0671	16.0128	18.4753
8	1.6465	2.1797	2.7326	3.4895	13.3616	15.5073	17.5346	20.0902
9	2.0879	2.7004	3.3251	4.1682	14.6837	16.9190	19.0229	21.6660
10	2.5582	3.2470	3.9403	4.8652	15.9872	18.3070	20.4831	23.2093

注意：背面有試題

