

淡江大學九十一年度進修學士班轉學生招生考試試題

系別：商管組三年級

科目：統計學

准帶項目請打「○」否則打「×」

計 算 機

()

本試題共 1 頁

本試題雙面印製

2002 商管組三年級統計學考題

(所有計算精確至小數以下第三位)

1. 請敘述或定義以下統計名詞或定理<20%>
 - a) 判定係數(Coefficient of Determination)
 - b) 隨機變數(Random Variable) c) 顯著水準(Level of Significance)
 - d) 中央極限定理(Central Limit Theorem) e) 檢定力(Power)
2. 設 A, B 為樣本空間中之任意兩個非空集合之事件, 則下列何者為真?
 - 1) 若 A 與 B 為互斥, 則 A 與 B 為獨立.
 - 2) 若 A 與 B 為互斥, 則 A^c 與 B^c 為互斥.
 - 3) 若 A 與 B 為獨立, 則 A^c 與 B^c 為獨立.
 - 4) 若 A 與 B 為不獨立, 則 A 與 B 為互斥.
 - 5) 若 A 與 B 為獨立, 則 A 與 B 不互斥. <10%>
3. 搖頭丸之尿液檢驗可靠信為: 若有吃此禁藥, 則有 95% 的機會有陽性反應, 若無吃者, 則有 1% 的機會有陽性反應, 已知某 Pub 有 1% 的人有吃此禁藥, 若隨機抽出一人作檢驗, 結果呈陽性反應, 試求此人確實有吃禁藥之機率. <10%>
4. 假設台積電最近一批出廠的晶片共有 1000 片, 抽取其中 50 片, 而有瑕疵者 3 片 <15%>
 - (1) 試求瑕疵率 P 的 95% 信賴區間。
 - (2) 假設該公司要求樣本比例與母體之誤差不能超過 0.01, 且有 95% 的信賴度, 則樣本數應為何?
 - (3) 承(2), 若 P 不知道, 則樣本數應為何?
5. A firm is studying the delivery times of two raw material suppliers. The firm is basically satisfied with supplier A and is prepared to stay with that supplier if the mean delivery time is the same as or less than that of supplier B. <30%>
 - (1) What are the null and alternative hypotheses?
 - (2) Assume the variances of two suppliers are equal and their independent samples are given below:

	Supplier A	Supplier B
N	21	21
\bar{X}	14days	12.5days
s	3days	2days

With $\alpha=0.05$, What is your conclusion from (1).

(3). Use P-value to make a conclusion.

(4). Find the 95% C.I. for $\mu_1 - \mu_2$. <20%>

6. 某大哥大電池廠商有三種不同製程, 他們想知道三種製程下所製造的電池充電時間是否有差別, 所以從三種製程中各抽出 5 個電池, 並記錄完全充電時間而得到 A 製程, B 製程, C 製程平均充電時間分別為 $\bar{y}_1=7.18$, $\bar{y}_2=8.1$, $\bar{y}_3=7.68$, 且充

◀ 注意背面尚有試題 ▶

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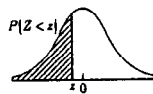
計算機

本試題共 頁

電時間平方合為 $\sum_{i=1}^3 \sum_{j=1}^5 y_{ij}^2 = 901.18: <20\%>$

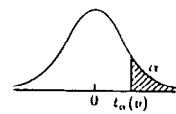
- (1) 若使用變異數分析方法處理該問題，應有那些前題假設？
 - (2) Set up ANOVA table.
 - (3) 檢定三種製程對充電時間的影響是否有顯著差異？ ($\alpha=5\%$)
7. 常態和 t 分配的平均數誰較大？變異數誰較大？ $<5\%>$

表二 標準常態機率分配表



z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
-3.5	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002
-3.4	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003
-3.3	.0005	.0005	.0005	.0004	.0004	.0004	.0004	.0004	.0004	.0003
-3.2	.0007	.0007	.0006	.0006	.0006	.0006	.0006	.0005	.0005	.0005
-3.1	.0010	.0009	.0009	.0009	.0008	.0008	.0008	.0008	.0007	.0007
-3.0	.0013	.0013	.0013	.0012	.0012	.0011	.0011	.0011	.0010	.0010
-2.9	.0019	.0018	.0018	.0017	.0016	.0016	.0015	.0015	.0014	.0014
-2.8	.0026	.0025	.0024	.0023	.0023	.0022	.0021	.0021	.0020	.0019
-2.7	.0035	.0034	.0033	.0032	.0031	.0030	.0029	.0028	.0027	.0026
-2.6	.0047	.0045	.0044	.0043	.0041	.0040	.0039	.0038	.0037	.0036
-2.5	.0062	.0060	.0059	.0057	.0055	.0054	.0052	.0051	.0049	.0048
-2.4	.0082	.0080	.0078	.0075	.0073	.0071	.0069	.0068	.0066	.0064
-2.3	.0107	.0104	.0102	.0099	.0096	.0094	.0091	.0089	.0087	.0084
-2.2	.0139	.0136	.0132	.0129	.0125	.0122	.0119	.0116	.0113	.0110
-2.1	.0179	.0174	.0170	.0166	.0162	.0158	.0154	.0150	.0146	.0143
-2.0	.0228	.0222	.0217	.0212	.0207	.0202	.0197	.0192	.0188	.0183
-1.9	.0287	.0281	.0274	.0268	.0262	.0256	.0250	.0244	.0239	.0233
-1.8	.0359	.0351	.0344	.0336	.0329	.0322	.0314	.0307	.0301	.0294
-1.7	.0446	.0436	.0427	.0418	.0409	.0401	.0392	.0384	.0375	.0367
-1.6	.0548	.0537	.0526	.0516	.0505	.0495	.0485	.0475	.0465	.0455
-1.5	.0668	.0655	.0643	.0630	.0618	.0606	.0594	.0582	.0571	.0559
-1.4	.0808	.0793	.0778	.0764	.0749	.0735	.0721	.0708	.0694	.0681
-1.3	.0968	.0951	.0934	.0918	.0901	.0885	.0869	.0853	.0838	.0823
-1.2	.1151	.1131	.1112	.1093	.1075	.1056	.1038	.1020	.1003	.0985
-1.1	.1357	.1335	.1314	.1292	.1271	.1251	.1230	.1210	.1190	.1170
-1.0	.1587	.1562	.1539	.1515	.1492	.1469	.1446	.1423	.1401	.1379
-0.9	.1841	.1814	.1788	.1762	.1736	.1711	.1685	.1660	.1635	.1611
-0.8	.2119	.2090	.2061	.2033	.2005	.1977	.1949	.1922	.1894	.1867
-0.7	.2420	.2389	.2356	.2327	.2297	.2266	.2236	.2206	.2177	.2146
-0.6	.2743	.2709	.2676	.2643	.2611	.2578	.2546	.2514	.2483	.2451
-0.5	.3085	.3050	.3015	.2981	.2946	.2912	.2877	.2843	.2810	.2776
-0.4	.3446	.3409	.3372	.3336	.3300	.3264	.3228	.3192	.3156	.3121
-0.3	.3821	.3783	.3745	.3707	.3669	.3632	.3594	.3557	.3520	.3483
-0.2	.4207	.4168	.4129	.4090	.4052	.4013	.3974	.3936	.3897	.3859
-0.1	.4602	.4562	.4522	.4483	.4443	.4404	.4364	.4325	.4286	.4247
0.0	.5000	.4960	.4920	.4880	.4840	.4801	.4761	.4721	.4681	.4641

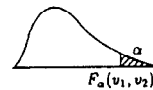
表三 t 分配百分點表



自由 度 (v)	α				
	.25	.10	.05	.025	.01
1	1.000	3.078	6.314	12.706	31.821
2	.816	1.886	2.920	4.303	6.965
3	.765	1.638	2.353	3.182	4.541
4	.741	1.533	2.132	2.776	3.747
5	.727	1.476	2.015	2.571	3.365
6	.718	1.440	1.943	2.447	3.143
7	.711	1.415	1.895	2.365	2.998
8	.706	1.397	1.860	2.306	2.896
9	.703	1.383	1.833	2.262	2.821
10	.700	1.372	1.812	2.228	2.764
11	.697	1.363	1.796	2.201	2.718
12	.695	1.356	1.782	2.179	2.681
13	.694	1.350	1.771	2.160	2.650
14	.692	1.345	1.761	2.145	2.624
15	.691	1.341	1.753	2.131	2.602
16	.690	1.337	1.746	2.120	2.583
17	.689	1.333	1.740	2.110	2.567
18	.688	1.330	1.734	2.101	2.552
19	.688	1.328	1.729	2.093	2.539
20	.687	1.325	1.725	2.086	2.528
21	.686	1.323	1.721	2.080	2.518
22	.686	1.321	1.717	2.074	2.508
23	.685	1.319	1.714	2.069	2.500
24	.685	1.318	1.711	2.064	2.492
25	.684	1.316	1.708	2.060	2.485
26	.684	1.315	1.706	2.056	2.479
27	.684	1.314	1.703	2.052	2.473
28	.683	1.313	1.701	2.048	2.467
29	.683	1.311	1.699	2.045	2.462
30	.683	1.310	1.697	2.042	2.457
40	.681	1.303	1.684	2.021	2.423
60	.679	1.296	1.671	2.000	2.390
120	.677	1.289	1.658	1.980	2.358
∞	.674	1.282	1.645	1.960	2.326

表五 (橫) F 分配百分點表

$\alpha = .05$



v_2	v_1	$\alpha = .05$																	
		1	2	3	4	5	6	7	8	9	10	12	15	20	25	30	40	60	
1	161.5	199.5	215.7	224.6	230.2	234.0	236.8	238.9	240.5	241.9	243.9	246.0	248.0	249.3	250.1	251.1	252.2		
2	18.51	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38	19.40	19.41	19.43	19.45	19.46	19.47	19.47	19.48		
3	10.13	9.65	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.74	8.70	8.66	8.63	8.62	8.59	8.57		
4	7.71	6.94	6.69	6.39	6.28	6.16	6.09	6.04	6.00	5.98	5.91	5.86	5.80	5.77	5.75	5.72	5.69		
5	6.61	5.79	5.41	5.19	5.05	4.95	4.86	4.82	4.77	4.74	4.68	4.62	4.56	4.52	4.50	4.46	4.43		
6	5.99	5.14	4.76	4.53	4.39	4.26	4.21	4.15	4.10	4.06	4.00	3.94	3.87	3.83	3.81	3.77	3.74		
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.58	3.51	3.44	3.40	3.38	3.34	3.30		
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.28	3.21	3.14	3.07	3.01	2.94	2.88	2.83	2.79
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.07	3.00	2.93	2.85	2.79	2.75	2.70	2.66	2.62
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98	2.91	2.85	2.79	2.72	2.66	2.60	2.53	2.49	2.49
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.78	2.71	2.64	2.57	2.50	2.47	2.43	2.38	2.38
12	4.75	3.89	3.49	3.26	3.11	3.00	2.92	2.85	2.80	2.75	2.69	2.62	2.54	2.47	2.40	2.37	2.33	2.28	2.28
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.60	2.53	2.46	2.41	2.34	2.31	2.27	2.22	2.22
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.53	2.46	2.39	2.34	2.27	2.24	2.20	2.16	2.16
15	4.54	3.68	3.28	3.05	2.90	2.79	2.71	2.64	2.59	2.54	2.48	2.40	2.33	2.28	2.25	2.20	2.16	2.12	2.12
16	4.49	3.63	3.23	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.42	2.35	2.28	2.23	2.19	2.15	2.11	2.07	2.07
17	4.45	3.59	3.20	2.98	2.81	2.70	2.61	2.55	2.49	2.45	2.38	2.31	2.23	2.18	2.15	2.10	2.06	2.02	2.02
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.34	2.27	2.19	2.14	2.11	2.06	2.02	1.98	1.98
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38	2.31	2.23	2.16	2.11	2.07	2.03	1.99	1.95	1.95
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.28	2.20	2.12	2.07	2.04	1.99	1.95	1.91	1.91
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32	2.25	2.17	2.10	2.05	2.01	1.96	1.92	1.88	1.88
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.23	2.15	2.07	2.02	1.98	1.94	1.89	1.85	1.85
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27	2.20	2.12	2.05	2.00	1.96	1.91	1.87	1.83	1.83
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25	2.18	2.10	2.03	1.97	1.94	1.89	1.84	1.80	1.80