淡江大學九十二學年度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「×」	
○	簡單型計算機

本試題共 7 頁

本試題雙面印製

● **選擇題** (4 points each)

1.(　　) 若虛無假設H_0為『新發行的藥不會增加心臟病突發的狀況』則下列何者的選擇較合適？(a) α=0.001 且β=0.1 (b) α=0.01 且β=0.05 (c) α=0.05 且β=0.01 (d) α=0.1 且β=0.001 (e) α=0.05 且β=0.05

2.(　　) 若虛無假設H_0為『我汽車的煞車系統需要修理了』則下列何者的選擇較合適？(a) α=0.001 且β=0.1 (b) α=0.01 且β=0.05 (c) α=0.05 且β=0.01 (d) α=0.1 且β=0.001 (e) α=0.05 且β=0.05

3.(　　) 下列何者爲真？(a)有可能$P(A\cap B)>P(B)$ (b) 若$B\subset A$則$P(A\cap B)=P(B)$ (c)若$A\cap B=\phi$則$P(A\cap B)=P(B)$ (d) $P(A\cap B)<P(B)$ (e)以上皆非。

4.(　　) If the mean of a normal distribution is negative, then (a) the standard deviation must also be negative (b) the variance must also be negative (c) a mistake has been made in the computations, because the mean of a normal distribution can not be negative (d) the standard deviation must be zero (e) None of these answers is correct.

5.(　　) In a regression analysis if $r^2 = 1$, then (a) SSE must also be equal to one (b) SSE must be equal to zero (c) SSE can be any positive value (d) SSE must be negative (e) None of these answers is correct.

● **填充題** (4 points each)

Exhibit 1

A regression analysis resulted in the following information regarding a dependent variable (y) and an independent variable (x). $n = 10$ $\Sigma x = 55$ $\Sigma y = 55$ $\Sigma x^2 = 385$ $\Sigma y^2 = 385$ $\Sigma xy = 220$.

1. Refer to Exhibit 1. The least squares estimate of the slope b_1 equals _____.
2. Refer to Exhibit 1. The least squares estimate of the intercept b_0 equals _____.
3. Refer to Exhibit 1. The point estimate of y when $x = 20$ is _____.
4. Refer to Exhibit 1. The sample correlation coefficient equals _____.
5. Refer to Exhibit 1. The coefficient of determination equals _____.

● **計算題** (**4 points each answer except for exhibit 2**)

1. You are given the following information on Events A, B, C, and D. P(A) = .4 P(A ∪ D) = .6 P(B) = .2 P(A | B) = .3 P(C) = .1 P(A ∩ C) = .04 P(A ∩ D) = .03
   (a). Compute P(A ∩ B).
   (b). Compute P(D).
   (c). Compute the probability of the complement of C.
   (d). Are A and C mutually exclusive?
   (e). Are A and C independent?
2. A local university reports that 20% of their students take their general education courses on a long -distance learning basis. Assume that five students of the local university are registered for a general education course.
   (a). What is the expected number of students who have registered for a general education course on a long -distance learning basis?
   (b). What is the probability that less than two students are registered for a general education course on a long -distance learning basis?

◀注意背面尚有試題▶

淡江大學九十二學年度轉學生招生考試試題 55-2

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本試題共 二 頁

3. 設一間斷隨機變數 X 其機率分配如下：$f(x)=\begin{cases}k(x^2+1), x=-1,0,1,2\\ 0 \quad ,x\text{爲其他值}\end{cases}$

(a). 求 k 值。

(b). 請計算 $P(x<2)$。

4. 某衛生機構欲估某城市人口患有近視的比例，若該機構所期望估計誤差小於 0.05 的機率為 0.95，請問在下面三種情況該抽出多少人檢查？

(a). 根據過去資料顯示，p 大約為 0.3。

(b). 不知道 p 值。

5. Assume the miles-per-gallon of the model Q cars is distributed with a mean of 22 miles-per-gallon and a standard deviation of 12 miles- per-gallon. 36 model Q cars are sampled.

(a). What is the probability that mean miles-per-gallon of the 36 cars will get less than 21 miles-per-gallon?

(b). What is the probability that mean miles-per-gallon of the 36 cars will get exactly 22 mean miles-per-gallon?

Exhibit 2 （2 points each answer）

The table below gives beverage preferences for random samples of teens and adults.

	Teens	Adults	Total
Coffee	50	200	250
Tea	100	150	250
Soft Drink	200	200	400
Other	50	50	100
	400	600	1,000

We are asked to test for independence between ages (i.e., adult and teen) and drink preferences.

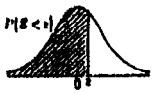
(a). Refer to Exhibit 2. With a .05 level of significance, what is the critical value for the test ?

(b). Refer to Exhibit 2. What is the expected number of adults who prefer coffee ?

(c). Refer to Exhibit 2. What is the calculated value of this test for independence ?

(d). Refer to Exhibit 2. What is the result of this test ?

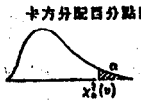
標準常態機率分配表



z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
.7	.7580	.7611	.7642	.7673	.7703	.7734	.7764	.7794	.7823	.7852
.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997
3.5	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998

「此表摘錄自 Johnson, R.A. and Bhattacharyya, G.K. (1996), STATISTICS, 3 edition, John

卡方分配百分點表



自由度 v \ α	.99	.975	.95	.90	.50	.10	.05	.025	.01
1	.0002	.001	.004	.02	.46	2.71	3.84	5.02	6.63
2	.02	.05	.10	.21	1.39	4.61	5.99	7.38	9.21
3	.11	.22	.35	.58	2.37	6.25	7.81	9.35	11.34
4	.30	.48	.71	1.06	3.36	7.78	9.49	11.14	13.28
5	.55	.83	1.15	1.61	4.35	9.24	11.07	12.83	15.09
6	.87	1.24	1.64	2.20	5.35	10.64	12.59	14.45	16.81
7	1.24	1.69	2.17	2.83	6.35	12.02	14.07	16.01	18.48
8	1.65	2.18	2.73	3.49	7.34	13.36	15.51	17.53	20.09
9	2.09	2.70	3.33	4.17	8.34	14.68	16.92	19.02	21.67
10	2.56	3.25	3.94	4.87	9.34	15.99	18.31	20.48	23.21
11	3.05	3.81	4.57	5.58	10.34	17.28	19.68	21.92	24.72
12	3.57	4.40	5.23	6.30	11.34	18.55	21.03	23.34	26.22
13	4.11	5.01	5.89	7.01	12.34	19.81	22.36	24.74	27.69
14	4.66	5.62	6.57	7.79	13.34	21.06	23.68	26.12	29.14
15	5.23	6.26	7.26	8.55	14.34	22.31	25.00	27.49	30.58
16	5.81	6.90	7.96	9.31	15.34	23.54	26.30	28.85	32.00
17	6.41	7.56	8.67	10.09	16.34	24.77	27.59	30.19	33.41
18	7.01	8.23	9.39	10.86	17.34	25.99	28.87	31.53	34.81
19	7.63	8.90	10.12	11.65	18.34	27.20	30.14	32.85	36.19
20	8.26	9.59	10.85	12.44	19.34	28.41	31.41	34.17	37.57
21	8.90	10.28	11.59	13.24	20.34	29.62	32.67	35.48	38.93
22	9.54	10.98	12.34	14.04	21.34	30.81	33.92	36.78	40.29
23	10.20	11.69	13.09	14.85	22.34	32.01	35.17	38.08	41.64
24	10.86	12.40	13.85	15.66	23.34	33.20	36.42	39.36	42.98
25	11.52	13.11	14.61	16.47	24.34	34.38	37.65	40.65	44.31
26	12.20	13.84	15.38	17.29	25.34	35.56	38.89	41.92	45.64
27	12.88	14.57	16.15	18.11	26.34	36.74	40.11	43.19	46.96
28	13.56	15.30	16.93	18.91	27.34	37.92	41.34	44.46	48.28
29	14.26	16.04	17.71	19.77	28.34	39.09	42.56	45.72	49.59
30	14.95	16.78	18.49	20.60	29.34	40.26	43.77	46.98	50.89
40	22.16	24.42	26.51	29.05	39.34	51.81	55.76	59.34	63.69
50	29.71	32.35	34.76	37.69	49.34	63.17	67.50	71.42	76.15
60	37.48	40.47	43.19	46.46	59.34	74.40	79.08	83.30	88.38
70	45.44	48.76	51.74	55.33	69.34	85.53	90.53	95.02	100.43
80	53.54	57.15	60.39	64.28	79.34	96.58	101.88	106.63	112.33
90	61.75	65.65	69.13	73.29	89.33	107.57	113.15	118.14	124.12
100	70.06	74.22	77.93	82.36	99.33	118.50	124.34	129.56	135.81

「此表摘錄自 Johnson, R.A. and Bhattacharyya, G.K. (1996), STATISTICS, 3 edition, John