

淡江大學九十二學年度碩士班招生考試試題

系列： 國際貿易學系
 資訊管理學系

科目： 統 計 學

准帶項目請打「○」否則打「x」
簡單型計算機
○

本試題共 二 頁

本試題雙面印製

- 設一工廠由三台機器甲、乙、丙製造某一產品。甲生產全部產品的 50%，乙生產全部產品的 30%，丙生產全部產品的 20%。依過去的記錄知甲的產品中有 3%，乙的產品中有 4%，丙的產品中有 5% 為不良品。
 - 自產品中任選一個，求其為不良品之機率。(6 分)
 - 若取出之產品為不良品，求此產品分別為機器甲、乙、丙製造的機率為多少。(9 分)
- 設某高爾夫球製造公司所生產的高爾夫球直徑為 $\mu = 1.96$ 吋， $\sigma = 0.04$ 吋的常態分布。若直徑小於 1.90 吋或大於 2.02 吋，則該球為不良品。試求該公司所生產的高爾夫球中不良品所佔的百分比為多少。(15 分)
- 甲、乙兩職棒隊一年比賽 20 場。在顯著水準 $\alpha = 0.05$ 下，試問甲隊在這 20 場比賽中至少要贏幾場以上，才能顯示該年甲隊對乙隊比賽時獲勝的機會超過 5 成？(20 分)
- 房地產公司想知道家庭年收入 (x ，單位：仟元) 與他們房子的坪數 (y ，單位：坪) 的關係。隨機抽取 10 戶，其資料如下：

坪數(y)	32	34	52	48	44	42	64	36	60	40
年收入(x)	660	780	1350	1110	840	1500	1680	1020	1800	1200

- 試求 x ， y 之間的相關係數是多少？並解釋其意義。(10 分)
 - 試求出房子坪數 y 對年收入 x 的迴歸式。(10 分)
 - 試求判定係數 R^2 ，並解釋其意義。(10 分)
- 5 自某大學隨機抽取的 200 位教授樣本中，其性別與職稱如下表所述：

職稱 性別	助理教授	副教授	教授
男	46	42	72
女	24	8	8

在顯著水準 $\alpha = 0.05$ 下，試根據上述資料檢定性別與職稱兩屬性是否獨立？(20 分)

◀ 注意背面尚有試題 ▶

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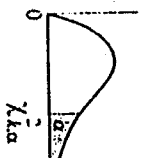
標準常態分布的累積分布函數表

$$\Phi(z) = \int_{-\infty}^z \frac{1}{\sqrt{2\pi}} e^{-\frac{t^2}{2}} dt, \quad z \geq 0$$

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	.7259	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
7	.7580	.7611	.7642	.7673	.7704	.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
10	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
11	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
12	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
13	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
14	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
15	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
16	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
17	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
18	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
19	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
20	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
21	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
22	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
23	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
24	.9918	.9920	.9922	.9923	.9927	.9929	.9931	.9932	.9934	.9936
25	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
26	.9953	.9955	.9956	.9957	.9958	.9960	.9961	.9962	.9963	.9964
27	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
28	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9980	.9981	.9981
29	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
30	.9987	.9987	.9987	.9988	.9988	.9988	.9989	.9989	.9990	.9990
31	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
32	.9993	.9993	.9994	.9994	.9994	.9994	.9995	.9995	.9995	.9995
33	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9997	.9997
34	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998

卡方分配表

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



單尾顯著水準

alpha	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	2.7204	3.4895	13.3616	15.5073	17.5346	20.0902
9	2.0982	2.7004	3.3251	4.1682	14.6837	16.9190	19.0228	21.6660
10	2.5982	3.2470	3.9403	4.8652	15.9872	18.3070	20.4831	23.2093
11	3.0535	3.8158	4.5748	5.5778	17.2750	19.6751	21.9200	24.7250
12	3.5706	4.4038	5.2260	6.3038	18.5494	21.0261	23.3367	26.2170
13	4.1069	5.0087	5.9319	7.0415	19.8119	22.3621	24.7356	27.6883
14	4.6604	5.6287	6.5706	7.7895	21.0642	23.6848	26.1190	29.1413
15	5.2294	6.2621	7.2609	8.5468	22.3072	24.9958	27.4884	30.5779
16	5.8122	6.9077	7.9616	9.3122	23.5418	26.2962	28.8454	31.9999
17	6.4078	7.5642	8.6738	10.0852	24.7690	27.5871	30.1910	33.4087
18	7.0149	8.2308	9.3905	10.8649	25.9894	28.8693	31.5264	34.8053
19	7.6337	8.9066	10.1170	11.6509	27.2036	30.1435	32.8523	36.1908
20	8.2664	9.5908	10.8508	12.4426	28.4120	31.5264	34.1696	37.5662
21	8.9125	10.2829	11.5913	13.2395	29.6151	32.6705	35.4789	38.9321
22	9.5725	10.9823	12.3380	14.0415	30.8133	33.9244	36.7807	40.2894
23	10.2455	11.6885	13.0905	14.8479	32.0059	35.1725	38.0757	41.6384
24	10.9317	12.4012	13.8484	15.6587	33.1963	36.4151	39.3641	42.9798
25	11.6300	13.1197	14.6114	16.4734	34.3816	37.6525	40.6465	44.3141
26	12.3403	13.8439	15.3791	17.2919	35.5631	38.8852	41.9232	45.6417
27	13.0626	14.5743	16.1513	18.1138	36.7412	40.1133	43.1944	46.9630
28	13.7968	15.3079	16.9279	18.9392	37.9159	41.3372	44.4607	48.2782
29	14.5425	16.0441	17.7083	19.7677	39.0875	42.5559	45.7222	49.5879
30	15.2891	16.7828	18.4826	20.5992	40.2560	43.7729	46.9792	50.8922
35	18.4672	20.5634	22.4650	24.7967	46.0588	49.8018	53.2033	57.3421
40	22.1643	24.4331	26.5023	29.0505	51.8050	55.7585	59.3417	63.6907
45	25.9013	28.3652	30.6123	33.3504	57.5052	61.6562	65.4102	69.9568
50	29.7067	32.3574	34.7642	37.6886	63.1671	67.5048	71.4202	76.1539
60	37.1553	40.4817	43.1879	46.4589	74.3970	79.0819	83.2916	88.3794
70	44.5448	48.4876	51.7393	55.3290	85.5271	90.5312	95.0211	100.4252
80	51.9826	56.3291	60.1915	64.2778	96.5782	101.8795	106.6266	112.3286
90	59.3408	64.0155	69.1260	73.2912	107.5680	113.1453	118.1359	124.1163
100	66.7668	71.42219	77.9295	82.3581	118.4960	124.3421	129.5612	135.8067
200	156.4320	162.7280	168.2786	174.8353	226.0210	233.9943	241.0579	249.4451
300	245.9725	253.9123	260.6781	269.0679	331.7885	341.8951	349.8745	359.9064
400	337.1553	346.4818	354.6410	364.2074	436.6480	447.6325	457.3055	468.7245
500	429.3875	439.9360	449.1468	459.9261	540.9303	553.1268	563.8515	576.4928