中國文化大學 100 學年度碩士班考試入學招生考試

系所組：國際企業管理學系碩士班一般生

日期節次：100 年 3 月 19 日第 2 節 11：00-12：30

科目：**統計學**

一、(50%) Single choice or multiple choices

(5% for each question)

1. Of the following, the one which is a reason why one might use a sign test to make a comparison between two populations is
   a. some studies yield responses which are difficult to quantify.
   b. it is easy to use the sign test procedure.
   c. the data in question consist of count data.
   d. no assumptions need to be made about the form of the population distribution.
2. The chi-square goodness-of-fit test
   a. is a lower tail test
   b. is an upper tail test
   c. is a two-tail test
   d. all of the above are correct
3. The multiple coefficient of determination, R-square, is
   a. the ratio of the unexplained sum of squares to the total sum of squares
   b. the ratio of SSR to Total SS
   c. not of much use in appraising a regression relationship
   d. can range from 0 to 1
4. In a simple linear regression model, a confidence interval for E(y) estimates
   a. the mean of y for a given x value
   b. the mean of y
   c. the value of y for a given x value
   d. the value of y for all x values
5. In analysis of variance, the null hypothesis is
   a. most of the means are equal
   b. none of the means are equal
   c. all of the means are equal
   d. all of the variances are equal

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6. Of the following, choose the correct statements
   a. the F distribution is a symmetric distribution
   b. the t distribution is symmetrical
   c. the shape of the chi-square distribution varies with the sample size
   d. the test for equality of two population variances assumes the means are equal
7. To locate the rejection region
   a. the level of type I error must be specified
   b. the level of type II error must be specified
   c. both of type I and II error must be specified
   d. neither type I error or type II error need be specified
8. If a researcher is using a 95% level of confidence in calculating a confidence interval
   a. 95% of the time the computed interval will include the sample mean
   b. 5% of the time such intervals will not include the population value
   c. in the long run, 95% of all sample means will fall within the interval
   d. 95% of the time the interval will not include the population value
9. As the sample size n increases, and the other situations are fixed, the width of the confidence interval for the population mean tends to
   a. increase
   b. decrease
   c. stay the same

10. Suppose that A and B are independent events, with P(A) = 0.2 and P(B) = 0.7, what is the probability that neither A or B occur?
   a. 0.14 b. 0.24 c. 0.90 d. none of the above

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請注意：1.未寫出計算式者不計分。請計算至小數點第二位，四捨五入。

2.機密資訊請在背面

二、某一企業之兩類顧客（A 與 B）的平均月購買金額如以下之表格所示。請問 B 類顧客之平均月購買金額是否顯著高於 A 類之顧客？

1. 請寫出虛無假設（H_0）與對立假設（H_1）。（5 分）
2. 請以 90%的信賴區間對上述之假設作檢定。（20 分）

顧客別	樣本數	平均月購買金額($\bar{x}$)	月購買金額之標準差(s)
A	40	$2100	$200
B	40	$2056	$160

三、設某都市之消費者的月所得（X）與其月消費金額（Y）之迴歸分析結果如下，請在 $\alpha = 0.1$的條件下，回答下列之問題。

Analysis of Variance

Source	DF	Sum of Square	Mean Square	F Value	P Value
Regression	2	40	40		
Error	30	150	3		
Total					

(1) 請在答案紙上複製此 ANOVA 表，並將必要的空格填滿。(8 分)

(2) 此一分析資料中有有多少人？(4 分)

(3) 請推論以下之假設是否顯著？並說明原因（註：不用計算）(6 分)

$$H_0 : \beta_1 = 0$$

$$H_1 : \beta_1 \neq 0$$

(4) 月所得（X）與其月消費金額（Y）之相關係數爲多少？(7 分)

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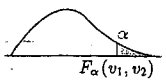
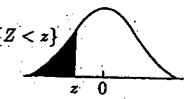
表 7　F 分配右尾百分點 $F_\alpha(v_1, v_2)$

$\alpha = 0.10$



v_2 \ v_1	1	2	3	4	5	6	7	8	9
1	39.864	49.500	53.593	55.833	57.241	58.204	58.906	59.439	59.858
2	8.5263	9.0000	9.1618	9.2434	9.2926	9.3255	9.3491	9.3668	9.3805
3	5.5383	5.4624	5.3908	5.3427	5.3092	5.2847	5.2662	5.2517	5.2400
4	4.5448	4.3246	4.1908	4.1073	4.0506	4.0098	3.9790	3.9549	3.9357
5	4.0604	3.7797	3.6195	3.5202	3.4530	3.4045	3.3679	3.3393	3.3163
6	3.7760	3.4633	3.2888	3.1808	1075	3.0546	3.0145	2.9830	2.9577
7	3.5894	3.2574	3.07[illegible]	2.9605	8833	2.8274	2.7849	2.7516	2.7247
8	3.4579	3.1131	2.92[illegible]	2.8064	2.7265	2.6683	2.6241	2.5893	2.5612
9	3.3603	3.0065	2.8129	2.6927	2.6106	2.5509	2.5053	2.4694	2.4403
10	3.2850	2.9245	2.7277	2.6053	2.5216	2.4606	2.4140	2.3772	2.3473
11	3.2252	2.8595	2.6602	2.5362	2.4512	2.3891	2.3416	2.3040	2.2735
12	3.1765	2.8068	2.6055	2.4801	2.3940	2.3310	2.2828	2.2446	2.2135
13	3.1362	2.7632	2.5603	2.4337	2.3467	2.2830	2.2341	2.1953	2.1638
14	3.1022	2.7265	2.5222	2.3947	2.3069	2.2426	2.1931	2.1539	2.1220
15	3.0732	2.6952	2.4898	2.3614	2.2730	2.2081	2.1582	2.1185	2.0862
16	3.0481	2.6682	2.4618	2.3327	2.2438	2.1783	2.1280	2.0880	2.0553
17	3.0262	2.6446	2.4374	2.3077	2.2183	2.1524	2.1017	2.0613	2.0284
18	3.0070	2.6239	2.4160	2.2858	2.1958	2.1296	2.0785	2.0379	2.0047
19	2.9899	2.6056	2.3970	2.2663	2.1760	2.1094	2.0580	2.0171	1.9836
20	2.9747	2.5893	2.3801	2.2489	2.1582	2.0913	2.0397	1.9985	1.9649
21	2.9609	2.5746	2.3649	2.2333	2.1423	2.0751	2.0232	1.9819	1.9480
22	2.9486	2.5613	2.3512	2.2193	2.1279	2.0605	2.0084	1.9668	1.9327
23	2.9374	2.5493	2.3387	2.2065	2.1149	2.0472	1.9949	1.9531	1.9189
24	2.9271	2.5383	2.3274	2.1949	2.1030	2.0351	1.9826	1.9407	1.9063
25	2.9177	2.5283	2.3170	2.1843	2.0922	2.0241	1.9714	1.9292	1.8947
26	2.9091	2.5191	2.3075	2.1745	2.0822	2.0139	1.9610	1.9188	1.8841
27	2.9012	2.5106	2.2987	2.1655	2.0730	2.0045	1.9515	1.9091	1.8743
28	2.8939	2.5028	2.2906	2.1571	2.0645	1.9959	1.9427	1.9001	1.8652
29	2.8871	2.4955	2.2831	2.1494	2.0566	1.9878	1.9345	1.8918	1.8560
30	2.8807	2.4887	2.2761	2.1422	2.0492	1.9803	1.9269	1.8841	1.8498
40	2.8354	2.4404	2.2261	2.0909	1.9968	1.9269	1.8725	1.8289	1.7929
60	2.7914	2.3932	2.1774	2.0410	1.9457	1.8747	1.8194	1.7748	1.7380
120	2.7478	2.3473	2.1300	1.9923	1.8959	1.8238	1.7675	1.7220	1.6843
∞	2.7055	2.3026	2.0838	1.9449	1.8473	1.7741	1.7167	1.6702	1.6315

表 4　標準常態分配值（續）



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	.9998
3.5	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998

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