

銘傳大學八十九學年度轉學生招生考試

八月一日 第四節

國、會、企、風、財、經、統 轉二

統計學 試題

請依照題號順序作答，作答次序不符試卷所列，不予計分。

可使用計算器、統計檢定題目一律用 0.05 顯著水準、答案小數點保持四位

一、選擇題 (20%)

- 在右斜 (right skewed) 分配中，下列何者為正確
a) 平均數 > 中位數 > 眾數 b) 中位數 > 平均數 > 眾數
c) 眾數 > 中位數 > 平均數 d) 眾數 > 中位數 > 平均數 e) 以上皆非
- 大學教育費用其中有一部分為購買書籍成本。一般書籍成本平均為 \$23 (千元) 和標準差間 (千元)。假如購書花費為一對稱分配，則我們可期望大約 95% 學生其書籍費用介於
a) \$5 - \$41 b) \$11 - \$35
c) \$17 - \$29 d) \$11 以上 e) 以上皆非
- 一家製造數位像機之廠商知道他出貨三十台中有八台是有點小問題。由於受貨店家驗貨時只隨機抽出兩台測試後，兩台皆沒有問題就接受。請問至少一台被驗出有問題的機率為
a) .5333 b) .4046
c) .0644 d) .4690 e) 以上皆非
- 商業局對每個月倒閉的小公司數目是使用波氏機率分配 (其平均數為 6.4) 估計基準。找出下個月剛好五家小公司倒閉的機率
a).384 b).235
c) .158 d).149 e) 以上皆非
- 中央極限定理在抽樣分配是如此的重要，其理由為
a) 當母體為近似常態分配我們可以不管所取樣本大小
b) 當母體為近似常態分配我們可以不管抽樣分配之形狀
c) 完全可以不理所取樣本大小
d) 當樣本大時，母體之形狀完全可以不理
e) 以上皆非
- 職業高爾夫球員在一場比賽中平均得 70 分且標準差 3 分。若隨機抽 36 位球員此賽一場，則其平均超過 71 分的機率
a).1293 b).4772
c) .3707 d).0228 e).0679
- 隨機抽樣一百家小型企業訪問其公司內員工請假記錄是否使用電腦時，僅 72 家回答「是」。以 95% 信賴區間估計該真正比率
a) $.72 \pm .082$ b) $.72 \pm .098$
c) $.72 \pm .074$ d) $.72 \pm .088$ e) $.72 \pm .069$
- 假若我們要檢定平均數大於 47 的假設，而結論為「平均數大於 47 但真正值為 52」時會產生
a) 型 II 誤差 b) 型 I 誤差

- c) 決策正確 d) 決策錯誤 e) 以上皆非

9. 食品檢驗局要必叫兩種品牌(A 和 B)的可樂飲料內咖啡因之含量。若樣本結果顯示品牌 A(n=15)的平均數 18oz 和變異數 1.2 和 B(n=10)的平均數 20 和變異數 1.5。列敘述何者正確？

- a) 在重複抽樣中，有 99%相同建立的區間會涵蓋真正平均數之差異
 b) 在重複抽樣中，真正平均數之差異會落在相同建立的 99%區間內
 c) 真正平均數之無差異會落在區間內的機率為 0.99
 d) 理論上，100 個建立的區間中有 99 個會包括樣本之平均差異
 e) 以上皆非

10. 在估計平均數中，欲降低估計誤差，下列敘述何者正確？

- a) 減少降低母體變異
 b) 去除樣本中之極端值
 c) 增加樣本
 d) 確定母體為常態分配
 e) 以上皆是

二、計算題 (30%)

1) Suppose it desired to compare two physical education training programs for preadolescent girls. A total of 82 girls were randomly selected, after three 6-week periods on the program, each girl is given a fitness test that yields a score between 0 and 100. The results follow below

	n	sample mean	variance
Program 1	41	78.7	201.6
Program 2	41	75.3	259.2

Calculate a 90% confidence interval for the ratio of the two variances.

$F_{0.10}(40, 40) = 1.51$; $F_{0.05}(40,40) = 1.69$

2)The sample data collected for a regression analysis have a SAS output as follow

SOURCE	DF	SS	MS	F	PR>F
MODEL	2	115145	57573	373	.0001
ERROR	9	1388	154		
C. TOTAL	11	116533			

	PARAMETER		T FOR H0:	
VARIABLES	ESTIMATES	STD ERROR	PARAMETER=0	PR> T
INTERCEPT	286.42	9.66	29.64	.0001
X	-.31	.06	-5.14	.0006
X*X	.000067	.00007	.95	.3647

- a) Test that the slope coefficient of X is less than zero.
 b) Calculate the coefficient of determination and interpret it.

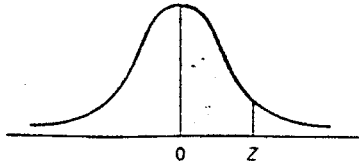
3)Suppose that a random variable X is distributed with a probability distribution

X=x	-1	0	1	2
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$P(X=x)$	0.3	0.2	0.3	0.2
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- Find the mean and variance of X .
- Find the mean and variance of \bar{X} of a random sample of size 100.

TABLE E.2 The Standardized Normal Distribution

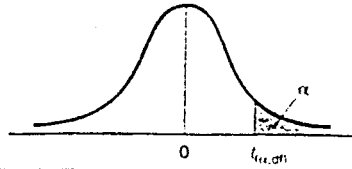


Entry represents area under the standardized normal distribution from the mean to Z

Z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2518	.2549
0.7	.2580	.2612	.2642	.2673	.2704	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4429	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4761	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4979	.4980	.4981
2.9	.4981	.4982	.4982	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.49865	.49869	.49874	.49878	.49882	.49886	.49889	.49893	.49897	.49900
3.1	.49903	.49906	.49910	.49913	.49916	.49918	.49921	.49924	.49926	.49929
3.2	.49931	.49934	.49936	.49938	.49940	.49942	.49944	.49946	.49948	.49950
3.3	.49952	.49953	.49955	.49957	.49958	.49960	.49961	.49962	.49964	.49965
3.4	.49966	.49968	.49969	.49970	.49971	.49972	.49973	.49974	.49975	.49976
3.5	.49977	.49978	.49978	.49979	.49980	.49981	.49981	.49982	.49983	.49983
3.6	.49984	.49985	.49985	.49986	.49986	.49987	.49987	.49988	.49988	.49989
3.7	.49989	.49990	.49990	.49990	.49991	.49991	.49992	.49992	.49993	.49993
3.8	.49993	.49993	.49993	.49994	.49994	.49994	.49994	.49995	.49995	.49995
3.9	.49995	.49995	.49996	.49996	.49996	.49996	.49996	.49996	.49997	.49997

TABLE E.1 Critical Values of t

For a particular number of degrees of freedom, entry represents the critical value of t corresponding to a specified upper tail area (α)



Degrees of Freedom	Upper Tail Areas (α)					
	.25	.10	.05	.025	.01	.005
1	1.0000	3.0777	6.3138	12.7062	31.8207	63.6574
2	0.8165	1.8856	2.9200	4.3027	6.9646	9.9248
3	0.7649	1.6377	2.3534	3.1824	4.5407	5.8409
4	0.7407	1.5332	2.1318	2.7764	3.7469	4.6041
5	0.7267	1.4759	2.0150	2.5706	3.3649	4.0322
6	0.7176	1.4398	1.9432	2.4469	3.1427	3.7074
7	0.7111	1.4149	1.8946	2.3646	2.9980	3.4995
8	0.7064	1.3968	1.8595	2.3060	2.8965	3.3554
9	0.7027	1.3830	1.8331	2.2622	2.8214	3.2498
10	0.6998	1.3722	1.8125	2.2281	2.7638	3.1693
11	0.6974	1.3634	1.7959	2.2010	2.7181	3.1058
12	0.6955	1.3562	1.7823	2.1788	2.6810	3.0545
13	0.6938	1.3502	1.7709	2.1604	2.6503	3.0123
14	0.6924	1.3450	1.7613	2.1448	2.6245	2.9768
15	0.6912	1.3406	1.7531	2.1315	2.6025	2.9467
16	0.6901	1.3368	1.7459	2.1199	2.5835	2.9208
17	0.6892	1.3334	1.7396	2.1098	2.5669	2.8982
18	0.6884	1.3304	1.7341	2.1009	2.5524	2.8784
19	0.6876	1.3277	1.7291	2.0930	2.5395	2.8609
20	0.6870	1.3253	1.7247	2.0860	2.5280	2.8453
21	0.6864	1.3232	1.7207	2.0796	2.5177	2.8314
22	0.6858	1.3212	1.7171	2.0739	2.5083	2.8188
23	0.6853	1.3195	1.7139	2.0687	2.4999	2.8073
24	0.6848	1.3178	1.7109	2.0639	2.4922	2.7969
25	0.6844	1.3163	1.7081	2.0595	2.4851	2.7874
26	0.6840	1.3150	1.7056	2.0555	2.4786	2.7787
27	0.6837	1.3137	1.7033	2.0518	2.4727	2.7707
28	0.6834	1.3125	1.7011	2.0484	2.4671	2.7633
29	0.6830	1.3114	1.6991	2.0452	2.4620	2.7564
30	0.6828	1.3104	1.6973	2.0423	2.4573	2.7500
31	0.6825	1.3095	1.6955	2.0395	2.4528	2.7440
32	0.6822	1.3086	1.6939	2.0369	2.4487	2.7385
33	0.6820	1.3077	1.6924	2.0345	2.4448	2.7333
34	0.6818	1.3070	1.6909	2.0322	2.4411	2.7284
35	0.6816	1.3062	1.6896	2.0301	2.4377	2.7238
36	0.6814	1.3055	1.6883	2.0281	2.4345	2.7195
37	0.6812	1.3049	1.6871	2.0262	2.4314	2.7154
38	0.6810	1.3042	1.6860	2.0244	2.4286	2.7116
39	0.6808	1.3036	1.6849	2.0227	2.4258	2.7079
40	0.6807	1.3031	1.6839	2.0211	2.4233	2.7045
41	0.6805	1.3025	1.6829	2.0195	2.4208	2.7012
42	0.6804	1.3020	1.6820	2.0181	2.4185	2.6981
43	0.6802	1.3016	1.6811	2.0167	2.4163	2.6951
44	0.6801	1.3011	1.6802	2.0154	2.4141	2.6923
45	0.6800	1.3006	1.6794	2.0141	2.4121	2.6896
46	0.6799	1.3002	1.6787	2.0129	2.4102	2.6870
47	0.6797	1.2998	1.6779	2.0117	2.4083	2.6846
48	0.6796	1.2994	1.6772	2.0106	2.4066	2.6822
49	0.6795	1.2991	1.6766	2.0096	2.4049	2.6800
50	0.6794	1.2987	1.6759	2.0086	2.4033	2.6778

〈 試題完 〉