

國立聯合大學 104 學年度

管理學院 財務金融學系 轉學生招生考試試題紙

科目： 統計學 第 1 頁共 3 頁

單選題，每小題 5 分，共 100 分

Exhibit-A. If A and B are independent events with $P(A) = 0.6$ and $P(B) = 0.5$. Then

1. Refer to Exhibit-A. $P(A \cap B) =$
(A) 0.3 (B) 0.4 (C) 0.5 (D) 0.6
2. Refer to Exhibit-A. $P(A \cup B) =$
(A) 0.5 (B) 0.6 (C) 0.7 (D) 0.8
3. Refer to Exhibit-A. $P(A|B) =$
(A) 0.5 (B) 0.6 (C) 0.7 (D) 0.8

Exhibit-B. A store manager tracks the number of customer complaints each week. The following data reflect a random sample of seven weeks.

5	6	8	6	6	2	2
---	---	---	---	---	---	---

4. Refer to Exhibit-B. Determine the true statement.
(A) The range (全距) for these data is 6. (B) The mode (眾數) for these data is 6.
(C) The median (中位數) for these data is 6. (D) All of the above are true.
5. Refer to Exhibit-B. The sample mean for these data is
(A) 3 (B) 4 (C) 5 (D) 6
6. Refer to Exhibit-B. The variance for these data is
(A) $\sqrt{5}$ (B) 3 (C) 4 (D) 5

Exhibit-C. For the hypotheses test $H_0: \mu = 60$ against $H_1: \mu > 60$, with $n = 15$, $S = 8$, and $\bar{X} = 64$,

7. Refer to Exhibit-C. The test statistic is approximately
(A) $t = 1.65$ (B) $t = 1.94$ (C) $t = 2.21$ (D) $t = 2.55$
8. Refer to Exhibit-C. Given a 5% significance level, the critical value is
(A) 1.761 (B) 1.753 (C) 2.131 (D) 2.145
9. Refer to Exhibit-C. Given a 5% significance level, state the conclusion.
(A) Because $t < 2.131$, H_0 cannot be rejected. (B) Because $t < 1.753$, we do reject H_0 .
(C) Because $t > 1.761$, we do reject H_0 . (D) Inconclusive.

Exhibit-D. Assume that X is a normally distributed random variable with a mean 60 and the standard deviation 10. That is, $X \sim N(60, 100)$.

10. Refer to Exhibit-D. The probability of $P(X \geq 70)$ is approximately
(A) 0.1587 (B) 0.3413 (C) 0.6587 (D) 0.8413
11. Refer to Exhibit-D. The probability of $P(55 \leq X \leq 70)$ is approximately
(A) 0.1498 (B) 0.5328 (C) 0.6587 (D) 0.8085
12. Refer to Exhibit-D. If $P(X \leq k) = 0.025$, then
(A) $k = 40.4$ (B) $k = 43.55$ (C) $k = 76.45$ (D) $k = 79.6$

國立聯合大學 104 學年度

管理學院 財務金融學系 轉學生招生考試試題紙

科目： 統計學 第 2 頁共 3 頁

Exhibit-E. The following information is based on independent random samples taken from two normally distributed populations having equal variances:

Sample 1	$\bar{X}_1 = 50$	$S_1^2 = 25$	$n_1 = 15$
Sample 2	$\bar{X}_2 = 53$	$S_2^2 = 36$	$n_2 = 13$

13. Refer to Exhibit-E. Based on the sample information, the pooled variance is approximately

- (A) $S_p^2 = 27.93$ (B) $S_p^2 = 30.08$ (C) $S_p^2 = 32.42$ (D) $S_p^2 = 34.23$

14. Refer to Exhibit-E. Based on the sample information, the t-statistic for testing $H_0: \mu_1 = \mu_2$ against $H_a: \mu_1 \neq \mu_2$ is approximately

- (A) $t = -1.57$ (B) $t = -1.44$ (C) $t = 1.57$ (D) $t = 1.71$

15. Refer to Exhibit-E. Based on the sample information, the critical value for testing $H_0: \mu_1 = \mu_2$ against $H_a: \mu_1 \neq \mu_2$ is

- (A) 1.701 (B) 1.706 (C) 2.048 (D) 2.056

16. Refer to Exhibit-E. Based on the sample information, given a 5% level of significance, what decision should be reached about the null hypothesis?

- (A) The null hypothesis cannot be rejected. (B) The null hypothesis must be rejected.
(C) The p-value is less than 5%. (D) Inconclusive.

Exhibit-F. The following information is based on a two-way ANOVA:

Source of variations	SS	d.f.	MS	F-value
Treatment	660	(a)	(b)	(c)
Block	(d)	3	(e)	2.5
Random	(f)	(g)	40	
Total	1200	11		

17. Refer to Exhibit-F. Based on the sample information, determine the true statement.

- (A) $a = 3$ (B) $b = 165$ (C) $c = 8.25$ (D) $c = 7.25$

18. Refer to Exhibit-F. Based on the sample information, compute

- (A) $d = 330$ (B) $e = 120$ (C) $f = 300$ (D) $g = 6$

19. Refer to Exhibit-F. How many treatments were used in this study?

- (A) 2 (B) 3 (C) 4 (D) 5

20. Refer to Exhibit-F. Test to determine whether treatment is effective using a 5% significance level.

- (A) Because $F > \text{critical } F = 3.98$, we do reject the null hypothesis and conclude that treatment is effective.
(B) Because $F < \text{critical } F = 4.75$, we do not reject the null hypothesis and conclude that treatment is not effective.
(C) Because $F > \text{critical } F = 5.14$, we do reject the null hypothesis and conclude that treatment is effective.
(D) Because $F < \text{critical } F = 3.58$, we do not reject the null hypothesis and conclude that treatment is not effective.

國立聯合大學 104 學年度

管理學院 財務金融學系 轉學生招生考試試題紙

科目： 統計學 第 3 頁共 3 頁

(表一) 若 $Z \sim N(0,1)$ ，則標準常態表的累積機率 $P(0 \leq Z \leq z)$
例如： $P(0 \leq Z \leq 1.96) = 0.4750$

Z	0	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2517	0.2549
0.7	0.2580	0.2611	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990

(表二) 若 $X \sim t(n)$ ，則單尾的 t 分配機率
例如： $P(t(4) \geq 2.776) = 0.025$

d.f.	0.01	0.0125	0.025	0.05
1	31.821	25.452	12.706	6.314
2	6.965	6.205	4.303	2.920
3	4.541	4.177	3.182	2.353
4	3.747	3.495	2.776	2.132
5	3.365	3.163	2.571	2.015
6	3.143	2.969	2.447	1.943
7	2.998	2.841	2.365	1.895
8	2.896	2.752	2.306	1.860
9	2.821	2.685	2.262	1.833
10	2.764	2.634	2.228	1.812
11	2.718	2.593	2.201	1.796
12	2.681	2.560	2.179	1.782
13	2.650	2.533	2.160	1.771
14	2.624	2.510	2.145	1.761
15	2.602	2.490	2.131	1.753
16	2.583	2.473	2.120	1.746
17	2.567	2.458	2.110	1.740
18	2.552	2.445	2.101	1.734
19	2.539	2.433	2.093	1.729
20	2.528	2.423	2.086	1.725
21	2.518	2.414	2.080	1.721
22	2.508	2.405	2.074	1.717
23	2.500	2.398	2.069	1.714
24	2.492	2.391	2.064	1.711
25	2.485	2.385	2.060	1.708
26	2.479	2.379	2.056	1.706
27	2.473	2.373	2.052	1.703
28	2.467	2.368	2.048	1.701
29	2.462	2.364	2.045	1.699
30	2.457	2.360	2.042	1.697

(表三) 若 $X \sim \chi^2(n)$ ，則卡方分配的機率： $P(\chi^2(15) \geq 24.9958) = 0.05$ 。

d.f.	0.005	0.01	0.025	0.05	0.10	0.20
1	7.8794	6.6349	5.0239	3.8415	2.7055	1.6424
2	10.5966	9.2103	7.3778	5.9915	4.6052	3.2189
3	12.8382	11.3449	9.3484	7.8147	6.2514	4.6416
4	14.8603	13.2767	11.1433	9.4877	7.7794	5.9886
5	16.7496	15.0863	12.8325	11.0705	9.2364	7.2893
6	18.5476	16.8119	14.4494	12.5916	10.6446	8.5581
7	20.2777	18.4753	16.0128	14.0671	12.0170	9.8032
8	21.9550	20.0902	17.5345	15.5073	13.3616	11.0301
9	23.5884	21.6660	19.0228	16.9190	14.6837	12.2421
10	25.1882	23.2093	20.4832	18.3070	15.9872	13.4420
11	26.7568	24.7250	21.9200	19.6751	17.2750	14.6314
12	28.2995	26.2170	23.3367	21.0261	18.5493	15.8120
13	29.8195	27.6882	24.7356	22.3620	19.8119	16.9848
14	31.3193	29.1412	26.1189	23.6848	21.0641	18.1508
15	32.8013	30.5779	27.4884	24.9958	22.3071	19.3107
16	34.2672	31.9999	28.8454	26.2962	23.5418	20.4651
17	35.7185	33.4087	30.1910	27.5871	24.7690	21.6146
18	37.1565	34.8053	31.5264	28.8693	25.9894	22.7595
19	38.5823	36.1909	32.8523	30.1435	27.2036	23.9004
20	39.9968	37.5662	34.1696	31.4104	28.4120	25.0375
21	41.4011	38.9322	35.4789	32.6706	29.6151	26.1711
22	42.7957	40.2894	36.7807	33.9244	30.8133	27.3015
23	44.1813	41.6384	38.0756	35.1725	32.0069	28.4288
24	45.5585	42.9798	39.3641	36.4150	33.1962	29.5533
25	46.9279	44.3141	40.6465	37.6525	34.3816	30.6752

(表四) 單尾為 0.05 之 $F(m,n)$ 分配，即 $P(F(m,n) \geq f) = 0.05$ 。
例如： $P(F(6,5) \geq 4.9503) = 0.05$ 。

	1	2	3	4	5	6	7	8	9	10	11	12
1	161.447	199.500	215.707	224.5832	230.161	233.986	236.768	238.882	240.543	241.881	242.983	243.9060
2	18.5128	19.0000	19.1643	19.2468	19.2964	19.3295	19.3532	19.3710	19.3848	19.3959	19.4050	19.4125
3	10.1280	9.5521	9.2766	9.1172	9.0135	8.9406	8.8867	8.8452	8.8123	8.7855	8.7633	8.7446
4	7.7086	6.9443	6.5914	6.3882	6.2561	6.1631	6.0942	6.0410	5.9988	5.9644	5.9358	5.9117
5	6.6079	5.7861	5.4095	5.1922	5.0503	4.9503	4.8759	4.8183	4.7725	4.7351	4.7040	4.6777
6	5.9874	5.1433	4.7571	4.5337	4.3874	4.2839	4.2067	4.1468	4.0990	4.0600	4.0274	3.9999
7	5.5914	4.7374	4.3468	4.1203	3.9715	3.8660	3.7870	3.7257	3.6767	3.6365	3.6030	3.5747
8	5.3177	4.4590	4.0662	3.8379	3.6875	3.5806	3.5005	3.4381	3.3881	3.3472	3.3130	3.2839
9	5.1174	4.2565	3.8625	3.6331	3.4817	3.3738	3.2927	3.2296	3.1789	3.1373	3.1025	3.0729
10	4.9646	4.1028	3.7083	3.4780	3.3258	3.2172	3.1355	3.0717	3.0204	2.9782	2.9430	2.9130
11	4.8443	3.9823	3.5874	3.3567	3.2039	3.0946	3.0123	2.9480	2.8962	2.8536	2.8179	2.7876
12	4.7472	3.8853	3.4903	3.2592	3.1059	2.9961	2.9134	2.8486	2.7964	2.7534	2.7173	2.6866
13	4.6672	3.8056	3.4105	3.1791	3.0254	2.9153	2.8321	2.7669	2.7144	2.6710	2.6347	2.6037
14	4.6001	3.7389	3.3439	3.1122	2.9582	2.8477	2.7642	2.6987	2.6458	2.6022	2.5655	2.5342
15	4.5431	3.6823	3.2874	3.0556	2.9013	2.7905	2.7066	2.6408	2.5876	2.5437	2.5068	2.4753
16	4.4940	3.6337	3.2389	3.0069	2.8524	2.7413	2.6572	2.5911	2.5377	2.4935	2.4564	2.4247
17	4.4513	3.5915	3.1968	2.9647	2.8100	2.6987	2.6143	2.5480	2.4943	2.4499	2.4126	2.3807
18	4.4139	3.5546	3.1599	2.9277	2.7729	2.6613	2.5767	2.5102	2.4563	2.4117	2.3742	2.3421
19	4.3807	3.5219	3.1274	2.8951	2.7401	2.6283	2.5435	2.4768	2.4227	2.3779	2.3402	2.3080
20	4.3512	3.4928	3.0984	2.8661	2.7109	2.5990	2.5140	2.4471	2.3928	2.3479	2.3100	2.2776
21	4.3248	3.4668	3.0725	2.8401	2.6848	2.5727	2.4876	2.4205	2.3660	2.3210	2.2829	2.2504
22	4.3009	3.4434	3.0491	2.8167	2.6613	2.5491	2.4638	2.3965	2.3419	2.2967	2.2585	2.2258
23	4.2793	3.4221	3.0280	2.7955	2.6400	2.5277	2.4422	2.3748	2.3201	2.2747	2.2364	2.2036
24	4.2597	3.4028	3.0088	2.7763	2.6207	2.5082	2.4226	2.3551	2.3002	2.2547	2.2163	2.1834
25	4.2417	3.3852	2.9912	2.7587	2.6030	2.4904	2.4047	2.3371	2.2821	2.2365	2.1979	2.1649