

東吳大學 103 學年度碩士班研究生招生考試試題

第 1 頁，共 3 頁

系級	國際經營與貿易學系碩士班國際貿易金融組	考試時間	100 分鐘
科目	統計學	本科總分	100 分

1. What is the level of measurement for each of following variables? Why? (10%)
 - a. Student IQ ratings
 - b. distance students travel to class
 - c. the jersey numbers of a sorority soccer team
 - d. a classification of students by state or birth
 - e. a summary of students by academic class-that is, freshman, sophomore, junior, and senior
2. The following frequency distribution reports the number of frequent flier miles, reported in thousands, for employees of Soochow Statistical Consulting Inc. during the most recent quarter. (10%)

Frequent flier Miles	Numbers of employees
0 up to 3	5
3 up to 6	12
6 up to 9	23
9 up to 12	8
12 up to 15	2
total	50

- a. How many employees were studied?
 - b. What is the midpoint of the first class?
 - c. Construct a histogram.
 - d. Construct a frequency polygon.
 - e. A frequency polygon is to be drawn. What are the coordinates of the plot for the first class?
3. Listed below are the commissions earned last month by a sample of 15 brokers at Soochow, Taipei City. Soochow is an investment company. (10%)

\$2038 1758 1721 1637 2097 2047 2205 1787 2287 1940
 2311 2054 2406 1471 1460

Locate the median, the first quartile, and the third quartile for the commissions earned. And show its box plot and outliers.

4. There are 5 flights daily from Taipei via China Airline into HK airport. Suppose the probability that any flight arrives late is .20. What is the probability that exactly two of the flights are late today? (5%)
5. A population consists of 15 items, 10 of which are acceptable. In a sample of 4 items, what is the probability that exactly 3 are acceptable? Assume the samples are drawn without replacement. (5%)

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第 2 頁，共 3 頁

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6. Assume a binomial probability distribution X with $n=40$ and $\text{probability}=.45$. Compute the following: (10%)
- The mean and variance of the random variable.
 - The probability that X is 25 or greater.
 - The probability that X is less than 15.
 - The probability that X is between 15 and 25, inclusive.

7. Filling the below blanks. (10%)

Source of Variation	Sum of squares	Degree of Freedom	Mean Square	F
Treatments	890.70	<input style="width: 40px; height: 20px;" type="text"/>	296.90	<input style="width: 40px; height: 20px;" type="text"/>
Error	<input style="width: 40px; height: 20px;" type="text"/>	18	<input style="width: 40px; height: 20px;" type="text"/>	
Total	1485.11			

8. The production department of Soochow International wants to explore the relationship between the number of employees who assemble a subassembly and the number produced. As an example, twenty employees were assigned to assemble the subassemblies. They produced thirty during a one-hour period. Then forty employees assembled them. They produced sixty during a one-hour period. The complete set of pair observations follows.

Number of assemblers	One-hour production(units)
20	30
40	60
20	40
30	60
10	30
10	40
20	40
20	50
20	30
30	70

The dependent variable is production; this is, it is assumed that different levels of production result from a different number of employees. (30%)

- Draw a scatter diagram.
- Determine the regression equation.
- Construct an ANOVA summary table.
- Determine the R^2 .
- Determine the adjusted R^2 .
- Determine the standard error of estimate.

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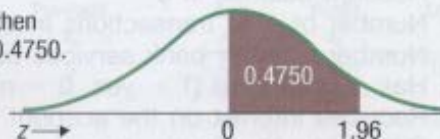
系級	國際經營與貿易學系碩士班國際貿易金融組	考試時間	100 分鐘
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- (7) Determine the production when employee is 25.
- (8) Interpret the R.
- (9) Determine the correlation coefficient.
- (10) Determine the t test for correlation coefficient.

9. Please state the Central Limit Theory and confidence interval. (10%)

B.1 Areas under the Normal Curve

Example:
If $z = 1.96$, then
 $P(0 \text{ to } z) = 0.4750$.



z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
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