

國立臺北大學 108 學年度日間學士班轉學生招生考試試題

學制系級：統計學系日間學士班 2、3 年級

科目：統計學

第 1 頁 共 7 頁

可 不可使用計算機

- (15%)1. A dean has found that 62% of entering freshmen and 78% of community college transfers eventually graduate. Of all entering students, 73% are freshmen and the remainder are community college transfers.
- What is the probability that a randomly chosen entering student is a freshman who will eventually graduate?
 - Find the probability that a randomly chosen entering student will eventually graduate.
 - What is the probability that a randomly chosen entering student is either a freshmen or will eventually graduate, or both?
 - Are the events “Eventually graduates” and “Enters as junior college transfer” statistically independent?

- (15%)2. A hamburger stand sells burgers for \$1.45 each. Daily sales have a distribution with mean 530 and standard deviation 69.
- Find the mean daily total revenues from the sale of hamburgers.
 - Find the standard deviation of total revenues from the sale of hamburgers.
 - Daily costs (in dollars) are given by
$$C = 100 + 0.95X$$
where X is the number of hamburgers sold. Find the mean and standard deviation of daily profits from sales.

- (15%)3. A consultant knows that it will cost her \$10,000 to fulfil a particular contract. The contract is to be put out for bids, and she believes that the lowest bid, excluding her own, can be represented by a distribution that is uniform between \$8,000 and \$20,000. Therefore, if the random variable X denotes the lowest of all other bids (in thousands of dollars), its probability density function is

$$f_x(x) = \begin{cases} \frac{1}{12}, & \text{for } 8 < x < 20 \\ 0, & \text{for all other values of } x \end{cases}$$

- What is the probability that the lowest of the other bids will be less than the consultant's cost estimate of \$10,000?
 - If the consultant submits a bid of \$12,000, what is the probability that she will secure the contract?
 - The consultant decides to submit a bid of \$12,000. What is her expected profit from this strategy?
 - If the consultant wants to submit a bid so that her expected profit is as high as possible, discuss how she should go about making this choice.
- (10%)4. It is believed that first-year salaries for newly qualified accountants follow a normal distribution with standard deviation \$2,500. A random sample of 16 observations was taken.
- Find the probability that the sample standard deviation is more than \$3,000.
 - Find the probability that the sample standard deviation is less than \$1,500.
- (10%)5. Independent random samples were taken of male and female clients of University Entrepreneurship Centers. These clients were considering starting a business. Of 94 male clients, 53 actually started a business venture, as did 47 of 68 female clients. Find and interpret the p-value of a test of equality of the population proportions against the alternative that the proportion of female clients actually starting a business is higher than the proportion of male clients.

試題隨卷繳交

接背面

國立臺北大學 108 學年度日間學士班轉學生招生考試試題

學制系級：統計學系日間學士班 2、3 年級

科目：統計學

第 2 頁 共 7 頁

可 不可使用計算機

- (20%)6. Supporters claim that a new windmill can generate an average of at least 800 kilowatts of power per day. Daily power generation for the windmill is assumed to be normally distributed with a standard deviation of 120 kilowatts. A random sample of 100 days is taken to test this claim against the alternative hypothesis that the true mean is less than 800 kilowatts. The claim will be accepted if the sample mean is 776 kilowatts or more and rejected otherwise.
- (a) What is the probability α of a Type I error using the decision rule if the population mean is in fact 800 kilowatts per day?
- (b) What is the probability β of a Type II error using this decision rule if the population mean is in fact 740 kilowatts per day?
- (c) Suppose that the same decision rule is used, but with a sample of 200 days rather than 100 days.
- (i) Would the value of α be larger than, smaller than, or the same as that found in (a)?
- (ii) Would the value of β be larger than, smaller than, or the same as that found in (b)?
- (d) Suppose that a sample of 100 observations was taken, but that the decision rule was changed so that the claim would be accepted if the sample mean was at least 765 kilowatts.
- (i) Would the value of α be larger than, smaller than, or the same as that found in (a)?
- (ii) Would the value of β be larger than, smaller than, or the same as that found in (b)?

- (15%)7. Based on a sample of 30 observations, the population regression model

$$Y_i = \beta_0 + \beta_1 x_i + \varepsilon_i$$

was estimated. The least squares estimates obtained

$$b_0 = 10.1 \text{ and } b_1 = 8.4$$

The regression and error sums of squares were

$$SSR = 128 \text{ and } SSE = 286$$

- (a) Find and interpret the coefficient of determination.
- (b) Test at the 10% significance level against a two-sided alternative the null hypothesis that β_1 is 0.
- (c) Find

$$\sum_{i=1}^{30} (x_i - \bar{X})^2$$

國立臺北大學 108 學年度日間學士班轉學生招生考試試題

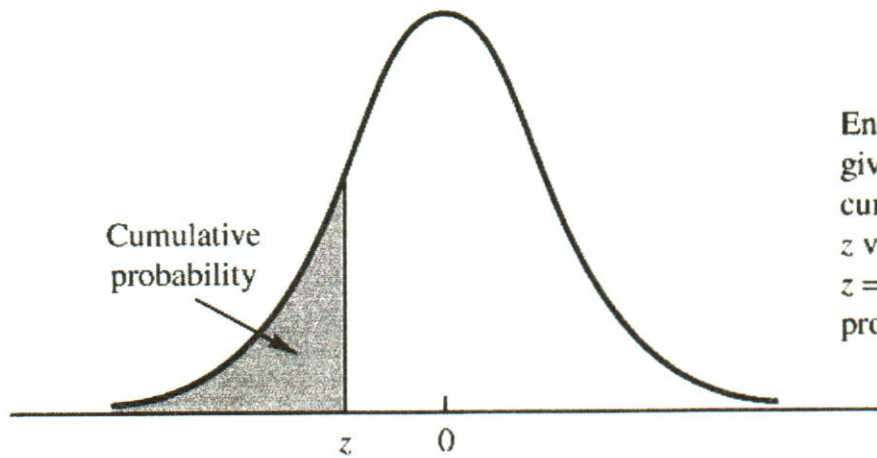
學制系級：統計學系日間學士班 2、3 年級

科 目：統計學

第 3 頁 共 7 頁

可 不可使用計算機

TABLE 1 CUMULATIVE PROBABILITIES FOR THE STANDARD NORMAL DISTRIBUTION



Entries in the table give the area under the curve to the left of the z value. For example, for $z = -.85$, the cumulative probability is .1977.

| z | .00 | .01 | .02 | .03 | .04 | .05 | .06 | .07 | .08 | .09 |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| -3.0 | .0013 | .0013 | .0013 | .0012 | .0012 | .0011 | .0011 | .0011 | .0010 | .0010 |
| -2.9 | .0019 | .0018 | .0018 | .0017 | .0016 | .0016 | .0015 | .0015 | .0014 | .0014 |
| -2.8 | .0026 | .0025 | .0024 | .0023 | .0023 | .0022 | .0021 | .0021 | .0020 | .0019 |
| -2.7 | .0035 | .0034 | .0033 | .0032 | .0031 | .0030 | .0029 | .0028 | .0027 | .0026 |
| -2.6 | .0047 | .0045 | .0044 | .0043 | .0041 | .0040 | .0039 | .0038 | .0037 | .0036 |
| -2.5 | .0062 | .0060 | .0059 | .0057 | .0055 | .0054 | .0052 | .0051 | .0049 | .0048 |
| -2.4 | .0082 | .0080 | .0078 | .0075 | .0073 | .0071 | .0069 | .0068 | .0066 | .0064 |
| -2.3 | .0107 | .0104 | .0102 | .0099 | .0096 | .0094 | .0091 | .0089 | .0087 | .0084 |
| -2.2 | .0139 | .0136 | .0132 | .0129 | .0125 | .0122 | .0119 | .0116 | .0113 | .0110 |
| -2.1 | .0179 | .0174 | .0170 | .0166 | .0162 | .0158 | .0154 | .0150 | .0146 | .0143 |
| -2.0 | .0228 | .0222 | .0217 | .0212 | .0207 | .0202 | .0197 | .0192 | .0188 | .0183 |
| -1.9 | .0287 | .0281 | .0274 | .0268 | .0262 | .0256 | .0250 | .0244 | .0239 | .0233 |
| -1.8 | .0359 | .0351 | .0344 | .0336 | .0329 | .0322 | .0314 | .0307 | .0301 | .0294 |
| -1.7 | .0446 | .0436 | .0427 | .0418 | .0409 | .0401 | .0392 | .0384 | .0375 | .0367 |
| -1.6 | .0548 | .0537 | .0526 | .0516 | .0505 | .0495 | .0485 | .0475 | .0465 | .0455 |
| -1.5 | .0668 | .0655 | .0643 | .0630 | .0618 | .0606 | .0594 | .0582 | .0571 | .0559 |
| -1.4 | .0808 | .0793 | .0778 | .0764 | .0749 | .0735 | .0721 | .0708 | .0694 | .0681 |
| -1.3 | .0968 | .0951 | .0934 | .0918 | .0901 | .0885 | .0869 | .0853 | .0838 | .0823 |
| -1.2 | .1151 | .1131 | .1112 | .1093 | .1075 | .1056 | .1038 | .1020 | .1003 | .0985 |
| -1.1 | .1357 | .1335 | .1314 | .1292 | .1271 | .1251 | .1230 | .1210 | .1190 | .1170 |
| -1.0 | .1587 | .1562 | .1539 | .1515 | .1492 | .1469 | .1446 | .1423 | .1401 | .1379 |
| -.9 | .1841 | .1814 | .1788 | .1762 | .1736 | .1711 | .1685 | .1660 | .1635 | .1611 |
| -.8 | .2119 | .2090 | .2061 | .2033 | .2005 | .1977 | .1949 | .1922 | .1894 | .1867 |
| -.7 | .2420 | .2389 | .2358 | .2327 | .2296 | .2266 | .2236 | .2206 | .2177 | .2148 |
| -.6 | .2743 | .2709 | .2676 | .2643 | .2611 | .2578 | .2546 | .2514 | .2483 | .2451 |
| -.5 | .3085 | .3050 | .3015 | .2981 | .2946 | .2912 | .2877 | .2843 | .2810 | .2776 |
| -.4 | .3446 | .3409 | .3372 | .3336 | .3300 | .3264 | .3228 | .3192 | .3156 | .3121 |
| -.3 | .3821 | .3783 | .3745 | .3707 | .3669 | .3632 | .3594 | .3557 | .3520 | .3483 |
| -.2 | .4207 | .4168 | .4129 | .4090 | .4052 | .4013 | .3974 | .3936 | .3897 | .3859 |
| -.1 | .4602 | .4562 | .4522 | .4483 | .4443 | .4404 | .4364 | .4325 | .4286 | .4247 |
| -.0 | .5000 | .4960 | .4920 | .4880 | .4840 | .4801 | .4761 | .4721 | .4681 | .4641 |

國立臺北大學 108 學年度日間學士班轉學生招生考試試題

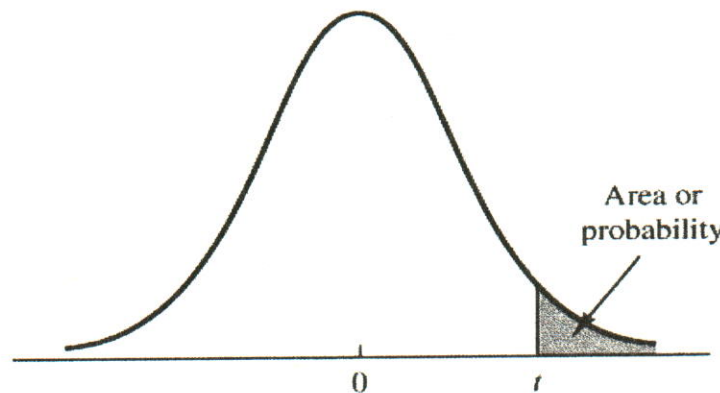
學制系級：統計學系日間學士班 2、3 年級

科目：統計學

第 4 頁 共 7 頁

可 不可使用計算機

TABLE 2 *t* DISTRIBUTION



Entries in the table give *t* values for an area or probability in the upper tail of the *t* distribution. For example, with 10 degrees of freedom and a .05 area in the upper tail, $t_{.05} = 1.812$.

| Degrees of Freedom | Area in Upper Tail | | | | | |
|--------------------|--------------------|-------|-------|--------|--------|--------|
| | .20 | .10 | .05 | .025 | .01 | .005 |
| 1 | 1.376 | 3.078 | 6.314 | 12.706 | 31.821 | 63.656 |
| 2 | 1.061 | 1.886 | 2.920 | 4.303 | 6.965 | 9.925 |
| 3 | .978 | 1.638 | 2.353 | 3.182 | 4.541 | 5.841 |
| 4 | .941 | 1.533 | 2.132 | 2.776 | 3.747 | 4.604 |
| 5 | .920 | 1.476 | 2.015 | 2.571 | 3.365 | 4.032 |
| 6 | .906 | 1.440 | 1.943 | 2.447 | 3.143 | 3.707 |
| 7 | .896 | 1.415 | 1.895 | 2.365 | 2.998 | 3.499 |
| 8 | .889 | 1.397 | 1.860 | 2.306 | 2.896 | 3.355 |
| 9 | .883 | 1.383 | 1.833 | 2.262 | 2.821 | 3.250 |
| 10 | .879 | 1.372 | 1.812 | 2.228 | 2.764 | 3.169 |
| 11 | .876 | 1.363 | 1.796 | 2.201 | 2.718 | 3.106 |
| 12 | .873 | 1.356 | 1.782 | 2.179 | 2.681 | 3.055 |
| 13 | .870 | 1.350 | 1.771 | 2.160 | 2.650 | 3.012 |
| 14 | .868 | 1.345 | 1.761 | 2.145 | 2.624 | 2.977 |
| 15 | .866 | 1.341 | 1.753 | 2.131 | 2.602 | 2.947 |
| 16 | .865 | 1.337 | 1.746 | 2.120 | 2.583 | 2.921 |
| 17 | .863 | 1.333 | 1.740 | 2.110 | 2.567 | 2.898 |
| 18 | .862 | 1.330 | 1.734 | 2.101 | 2.552 | 2.878 |
| 19 | .861 | 1.328 | 1.729 | 2.093 | 2.539 | 2.861 |
| 20 | .860 | 1.325 | 1.725 | 2.086 | 2.528 | 2.845 |
| 21 | .859 | 1.323 | 1.721 | 2.080 | 2.518 | 2.831 |
| 22 | .858 | 1.321 | 1.717 | 2.074 | 2.508 | 2.819 |
| 23 | .858 | 1.319 | 1.714 | 2.069 | 2.500 | 2.807 |
| 24 | .857 | 1.318 | 1.711 | 2.064 | 2.492 | 2.797 |
| 25 | .856 | 1.316 | 1.708 | 2.060 | 2.485 | 2.787 |
| 26 | .856 | 1.315 | 1.706 | 2.056 | 2.479 | 2.779 |
| 27 | .855 | 1.314 | 1.703 | 2.052 | 2.473 | 2.771 |
| 28 | .855 | 1.313 | 1.701 | 2.048 | 2.467 | 2.763 |
| 29 | .854 | 1.311 | 1.699 | 2.045 | 2.462 | 2.756 |
| 30 | .854 | 1.310 | 1.697 | 2.042 | 2.457 | 2.750 |
| 31 | .853 | 1.309 | 1.696 | 2.040 | 2.453 | 2.744 |
| 32 | .853 | 1.309 | 1.694 | 2.037 | 2.449 | 2.738 |
| 33 | .853 | 1.308 | 1.692 | 2.035 | 2.445 | 2.733 |
| 34 | .852 | 1.307 | 1.691 | 2.032 | 2.441 | 2.728 |

國立臺北大學 108 學年度日間學士班轉學生招生考試試題

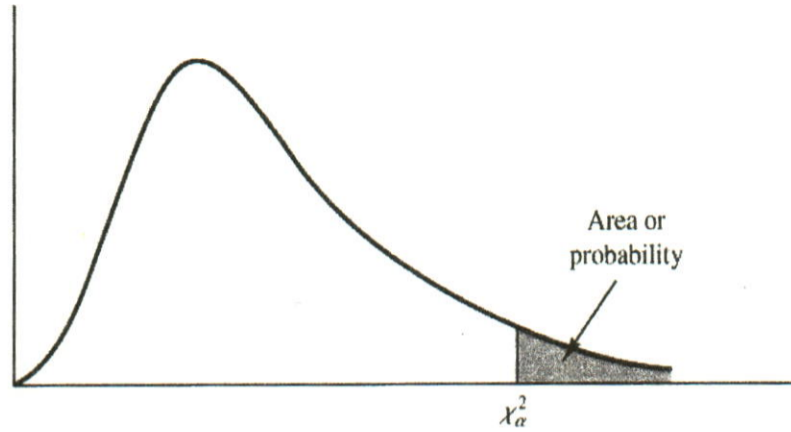
學制系級：統計學系日間學士班 2、3 年級

科 目：統計學

第 5 頁 共 7 頁

可 不可使用計算機

TABLE 3 CHI-SQUARE DISTRIBUTION



Entries in the table give χ_{α}^2 values, where α is the area or probability in the upper tail of the chi-square distribution. For example, with 10 degrees of freedom and a .01 area in the upper tail, $\chi_{.01}^2 = 23.209$.

| Degrees of Freedom | Area in Upper Tail | | | | | | | | | |
|--------------------|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | .995 | .99 | .975 | .95 | .90 | .10 | .05 | .025 | .01 | .005 |
| 1 | .000 | .000 | .001 | .004 | .016 | 2.706 | 3.841 | 5.024 | 6.635 | 7.879 |
| 2 | .010 | .020 | .051 | .103 | .211 | 4.605 | 5.991 | 7.378 | 9.210 | 10.597 |
| 3 | .072 | .115 | .216 | .352 | .584 | 6.251 | 7.815 | 9.348 | 11.345 | 12.838 |
| 4 | .207 | .297 | .484 | .711 | 1.064 | 7.779 | 9.488 | 11.143 | 13.277 | 14.860 |
| 5 | .412 | .554 | .831 | 1.145 | 1.610 | 9.236 | 11.070 | 12.832 | 15.086 | 16.750 |
| 6 | .676 | .872 | 1.237 | 1.635 | 2.204 | 10.645 | 12.592 | 14.449 | 16.812 | 18.548 |
| 7 | .989 | 1.239 | 1.690 | 2.167 | 2.833 | 12.017 | 14.067 | 16.013 | 18.475 | 20.278 |
| 8 | 1.344 | 1.647 | 2.180 | 2.733 | 3.490 | 13.362 | 15.507 | 17.535 | 20.090 | 21.955 |
| 9 | 1.735 | 2.088 | 2.700 | 3.325 | 4.168 | 14.684 | 16.919 | 19.023 | 21.666 | 23.589 |
| 10 | 2.156 | 2.558 | 3.247 | 3.940 | 4.865 | 15.987 | 18.307 | 20.483 | 23.209 | 25.188 |
| 11 | 2.603 | 3.053 | 3.816 | 4.575 | 5.578 | 17.275 | 19.675 | 21.920 | 24.725 | 26.757 |
| 12 | 3.074 | 3.571 | 4.404 | 5.226 | 6.304 | 18.549 | 21.026 | 23.337 | 26.217 | 28.300 |
| 13 | 3.565 | 4.107 | 5.009 | 5.892 | 7.041 | 19.812 | 22.362 | 24.736 | 27.688 | 29.819 |
| 14 | 4.075 | 4.660 | 5.629 | 6.571 | 7.790 | 21.064 | 23.685 | 26.119 | 29.141 | 31.319 |
| 15 | 4.601 | 5.229 | 6.262 | 7.261 | 8.547 | 22.307 | 24.996 | 27.488 | 30.578 | 32.801 |
| 16 | 5.142 | 5.812 | 6.908 | 7.962 | 9.312 | 23.542 | 26.296 | 28.845 | 32.000 | 34.267 |
| 17 | 5.697 | 6.408 | 7.564 | 8.672 | 10.085 | 24.769 | 27.587 | 30.191 | 33.409 | 35.718 |
| 18 | 6.265 | 7.015 | 8.231 | 9.390 | 10.865 | 25.989 | 28.869 | 31.526 | 34.805 | 37.156 |
| 19 | 6.844 | 7.633 | 8.907 | 10.117 | 11.651 | 27.204 | 30.144 | 32.852 | 36.191 | 38.582 |
| 20 | 7.434 | 8.260 | 9.591 | 10.851 | 12.443 | 28.412 | 31.410 | 34.170 | 37.566 | 39.997 |
| 21 | 8.034 | 8.897 | 10.283 | 11.591 | 13.240 | 29.615 | 32.671 | 35.479 | 38.932 | 41.401 |
| 22 | 8.643 | 9.542 | 10.982 | 12.338 | 14.041 | 30.813 | 33.924 | 36.781 | 40.289 | 42.796 |
| 23 | 9.260 | 10.196 | 11.689 | 13.091 | 14.848 | 32.007 | 35.172 | 38.076 | 41.638 | 44.181 |
| 24 | 9.886 | 10.856 | 12.401 | 13.848 | 15.659 | 33.196 | 36.415 | 39.364 | 42.980 | 45.558 |
| 25 | 10.520 | 11.524 | 13.120 | 14.611 | 16.473 | 34.382 | 37.652 | 40.646 | 44.314 | 46.928 |
| 26 | 11.160 | 12.198 | 13.844 | 15.379 | 17.292 | 35.563 | 38.885 | 41.923 | 45.642 | 48.290 |
| 27 | 11.808 | 12.878 | 14.573 | 16.151 | 18.114 | 36.741 | 40.113 | 43.195 | 46.963 | 49.645 |
| 28 | 12.461 | 13.565 | 15.308 | 16.928 | 18.939 | 37.916 | 41.337 | 44.461 | 48.278 | 50.994 |
| 29 | 13.121 | 14.256 | 16.047 | 17.708 | 19.768 | 39.087 | 42.557 | 45.722 | 49.588 | 52.335 |

國立臺北大學 108 學年度日間學士班轉學生招生考試試題

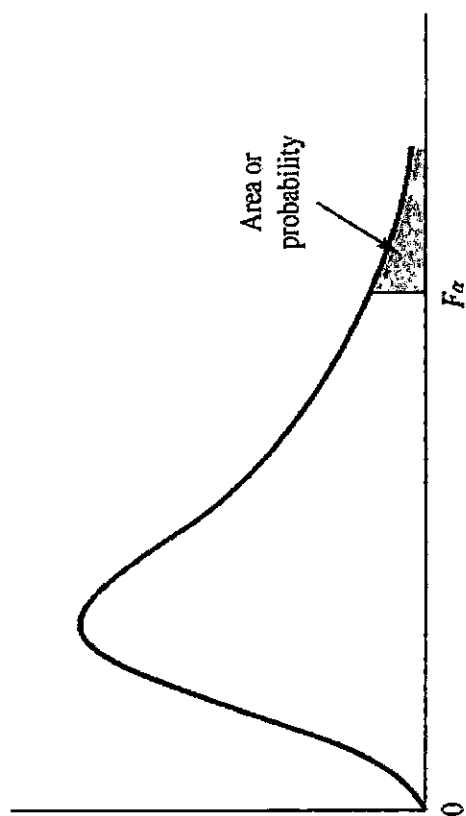
學制系級：統計學系日間學士班 2、3 年級

科目：統計學

第 6 頁 共 7 頁

可 不可使用計算機

TABLE 4 F DISTRIBUTION



Entries in the table give F_{α} values, where α is the area or probability in the upper tail of the F distribution. For example, with 4 numerator degrees of freedom, 8 denominator degrees of freedom, and a .05 area in the upper tail, $F_{.05} = 3.84$.

| Denominator Degrees of Freedom | Area in Upper Tail | Numerator Degrees of Freedom | | | | | | | | | | | | | | | | | |
|--------------------------------|--------------------|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 15 | 20 | 25 | 30 | 40 | 60 | 100 | 1000 |
| 1 | .10 | 39.86 | 49.50 | 53.59 | 55.83 | 57.24 | 58.20 | 58.91 | 59.44 | 59.86 | 60.19 | 61.22 | 61.74 | 62.05 | 62.26 | 62.53 | 62.79 | 63.01 | 63.30 |
| | .05 | 161.45 | 199.50 | 215.71 | 224.58 | 230.16 | 233.99 | 236.77 | 238.88 | 240.54 | 241.88 | 245.95 | 248.02 | 249.26 | 250.10 | 251.14 | 252.20 | 253.04 | 254.19 |
| | .025 | 647.79 | 799.48 | 864.15 | 899.60 | 921.83 | 937.11 | 948.20 | 956.64 | 963.28 | 968.63 | 984.87 | 993.08 | 998.09 | 1001.40 | 1005.60 | 1009.79 | 1013.16 | 1017.76 |
| | .01 | 4052.18 | 4999.34 | 5403.53 | 5624.26 | 5763.96 | 5858.95 | 5928.33 | 5980.95 | 6022.40 | 6055.93 | 6156.97 | 6208.66 | 6239.86 | 6260.35 | 6286.43 | 6312.97 | 6333.92 | 6362.80 |
| 2 | .10 | 8.53 | 9.00 | 9.16 | 9.24 | 9.29 | 9.33 | 9.35 | 9.37 | 9.38 | 9.39 | 9.42 | 9.44 | 9.45 | 9.46 | 9.47 | 9.47 | 9.48 | 9.49 |
| | .05 | 18.51 | 19.00 | 19.16 | 19.25 | 19.30 | 19.33 | 19.35 | 19.37 | 19.38 | 19.40 | 19.43 | 19.45 | 19.46 | 19.46 | 19.47 | 19.48 | 19.49 | 19.49 |
| | .025 | 38.51 | 39.00 | 39.17 | 39.25 | 39.30 | 39.33 | 39.36 | 39.37 | 39.39 | 39.40 | 39.43 | 39.45 | 39.46 | 39.46 | 39.47 | 39.48 | 39.49 | 39.50 |
| | .01 | 98.50 | 99.00 | 99.16 | 99.25 | 99.30 | 99.33 | 99.36 | 99.38 | 99.39 | 99.40 | 99.43 | 99.45 | 99.46 | 99.47 | 99.48 | 99.48 | 99.49 | 99.50 |
| 3 | .10 | 5.54 | 5.46 | 5.39 | 5.34 | 5.31 | 5.28 | 5.27 | 5.25 | 5.24 | 5.23 | 5.20 | 5.18 | 5.17 | 5.17 | 5.16 | 5.15 | 5.14 | 5.13 |
| | .05 | 10.13 | 9.55 | 9.28 | 9.12 | 9.01 | 8.94 | 8.89 | 8.85 | 8.81 | 8.79 | 8.70 | 8.66 | 8.63 | 8.62 | 8.59 | 8.57 | 8.55 | 8.53 |
| | .025 | 17.44 | 16.04 | 15.44 | 15.10 | 14.88 | 14.73 | 14.62 | 14.54 | 14.47 | 14.42 | 14.25 | 14.17 | 14.12 | 14.08 | 14.04 | 13.99 | 13.96 | 13.91 |
| | .01 | 34.12 | 30.82 | 29.46 | 28.71 | 28.24 | 27.91 | 27.67 | 27.49 | 27.34 | 27.23 | 26.87 | 26.69 | 26.58 | 26.50 | 26.41 | 26.32 | 26.24 | 26.14 |
| 4 | .10 | 4.54 | 4.32 | 4.19 | 4.11 | 4.05 | 4.01 | 3.98 | 3.95 | 3.94 | 3.92 | 3.87 | 3.84 | 3.83 | 3.82 | 3.80 | 3.79 | 3.78 | 3.76 |
| | .05 | 7.71 | 6.94 | 6.59 | 6.39 | 6.26 | 6.16 | 6.09 | 6.04 | 6.00 | 5.96 | 5.86 | 5.80 | 5.77 | 5.75 | 5.72 | 5.69 | 5.66 | 5.63 |
| | .025 | 12.22 | 10.65 | 9.98 | 9.60 | 9.36 | 9.20 | 9.07 | 8.98 | 8.90 | 8.84 | 8.66 | 8.56 | 8.50 | 8.46 | 8.41 | 8.36 | 8.32 | 8.26 |
| | .01 | 21.20 | 18.00 | 16.69 | 15.98 | 15.52 | 15.21 | 14.98 | 14.80 | 14.66 | 14.55 | 14.20 | 14.02 | 13.91 | 13.84 | 13.75 | 13.65 | 13.58 | 13.47 |
| 5 | .10 | 4.06 | 3.78 | 3.62 | 3.52 | 3.45 | 3.40 | 3.37 | 3.34 | 3.32 | 3.30 | 3.24 | 3.21 | 3.19 | 3.17 | 3.16 | 3.14 | 3.13 | 3.11 |
| | .05 | 6.61 | 5.79 | 5.41 | 5.19 | 5.05 | 4.95 | 4.88 | 4.82 | 4.77 | 4.74 | 4.62 | 4.56 | 4.52 | 4.50 | 4.46 | 4.43 | 4.41 | 4.37 |
| | .025 | 10.01 | 8.43 | 7.76 | 7.39 | 7.15 | 6.98 | 6.85 | 6.76 | 6.68 | 6.62 | 6.43 | 6.33 | 6.27 | 6.23 | 6.18 | 6.12 | 6.08 | 6.02 |
| | .01 | 16.26 | 13.27 | 12.06 | 11.39 | 10.97 | 10.67 | 10.46 | 10.29 | 10.16 | 10.05 | 9.72 | 9.55 | 9.45 | 9.38 | 9.29 | 9.20 | 9.13 | 9.03 |

國立臺北大學 108 學年度日間學士班轉學生招生考試試題

學制系級：統計學系日間學士班 2、3 年級

科目：統計學

第 7 頁 共 7 頁

可 不可使用計算機

TABLE 4 F DISTRIBUTION (Continued)

| Denominator Degrees of Freedom | Area in Upper Tail | Numerator Degrees of Freedom | | | | | | | | | | | | | | | | | | |
|--------------------------------------|--------------------------|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 15 | 20 | 25 | 30 | 40 | 60 | 100 | 1000 | |
| 25 | .10 | 2.92 | 2.53 | 2.32 | 2.18 | 2.09 | 2.02 | 1.97 | 1.93 | 1.89 | 1.87 | 1.77 | 1.72 | 1.68 | 1.66 | 1.63 | 1.59 | 1.56 | 1.52 | 1.52 |
| | .05 | 4.24 | 3.39 | 2.99 | 2.76 | 2.60 | 2.49 | 2.40 | 2.34 | 2.28 | 2.24 | 2.09 | 2.01 | 1.96 | 1.92 | 1.87 | 1.82 | 1.78 | 1.72 | 1.72 |
| | .025 | 5.69 | 4.29 | 3.69 | 3.35 | 3.13 | 2.97 | 2.85 | 2.75 | 2.68 | 2.61 | 2.41 | 2.30 | 2.23 | 2.18 | 2.12 | 2.05 | 2.00 | 1.91 | 1.91 |
| | .01 | 7.77 | 5.57 | 4.68 | 4.18 | 3.85 | 3.63 | 3.46 | 3.32 | 3.22 | 3.13 | 2.85 | 2.70 | 2.60 | 2.54 | 2.45 | 2.36 | 2.29 | 2.29 | 2.18 |
| 26 | .10 | 2.91 | 2.52 | 2.31 | 2.17 | 2.08 | 2.01 | 1.96 | 1.92 | 1.88 | 1.86 | 1.76 | 1.71 | 1.67 | 1.65 | 1.61 | 1.58 | 1.55 | 1.51 | 1.51 |
| | .05 | 4.23 | 3.37 | 2.98 | 2.74 | 2.59 | 2.47 | 2.39 | 2.32 | 2.27 | 2.22 | 2.07 | 1.99 | 1.94 | 1.90 | 1.85 | 1.80 | 1.76 | 1.70 | 1.70 |
| | .025 | 5.66 | 4.27 | 3.67 | 3.33 | 3.10 | 2.94 | 2.82 | 2.73 | 2.65 | 2.59 | 2.39 | 2.28 | 2.21 | 2.16 | 2.09 | 2.03 | 1.97 | 1.89 | 1.89 |
| | .01 | 7.72 | 5.53 | 4.64 | 4.14 | 3.82 | 3.59 | 3.42 | 3.29 | 3.18 | 3.09 | 2.81 | 2.66 | 2.57 | 2.50 | 2.42 | 2.33 | 2.25 | 2.25 | 2.14 |
| 27 | .10 | 2.90 | 2.51 | 2.30 | 2.17 | 2.07 | 2.00 | 1.95 | 1.91 | 1.87 | 1.85 | 1.75 | 1.70 | 1.66 | 1.64 | 1.60 | 1.57 | 1.54 | 1.50 | 1.50 |
| | .05 | 4.21 | 3.35 | 2.96 | 2.73 | 2.57 | 2.46 | 2.37 | 2.31 | 2.25 | 2.20 | 2.06 | 1.97 | 1.92 | 1.88 | 1.84 | 1.79 | 1.74 | 1.68 | 1.68 |
| | .025 | 5.63 | 4.24 | 3.65 | 3.31 | 3.08 | 2.92 | 2.80 | 2.71 | 2.63 | 2.57 | 2.36 | 2.25 | 2.18 | 2.13 | 2.07 | 2.00 | 1.94 | 1.86 | 1.86 |
| | .01 | 7.68 | 5.49 | 4.60 | 4.11 | 3.78 | 3.56 | 3.39 | 3.26 | 3.15 | 3.06 | 2.78 | 2.63 | 2.54 | 2.47 | 2.38 | 2.29 | 2.22 | 2.22 | 2.11 |
| 28 | .10 | 2.89 | 2.50 | 2.29 | 2.16 | 2.06 | 2.00 | 1.94 | 1.90 | 1.87 | 1.84 | 1.74 | 1.69 | 1.65 | 1.63 | 1.59 | 1.56 | 1.53 | 1.48 | 1.48 |
| | .05 | 4.20 | 3.34 | 2.95 | 2.71 | 2.56 | 2.45 | 2.36 | 2.29 | 2.24 | 2.19 | 2.04 | 1.96 | 1.91 | 1.87 | 1.82 | 1.77 | 1.73 | 1.66 | 1.66 |
| | .025 | 5.61 | 4.22 | 3.63 | 3.29 | 3.06 | 2.90 | 2.78 | 2.69 | 2.61 | 2.55 | 2.34 | 2.23 | 2.16 | 2.11 | 2.05 | 1.98 | 1.92 | 1.84 | 1.84 |
| | .01 | 7.64 | 5.45 | 4.57 | 4.07 | 3.75 | 3.53 | 3.36 | 3.23 | 3.12 | 3.03 | 2.75 | 2.60 | 2.51 | 2.44 | 2.35 | 2.26 | 2.19 | 2.19 | 2.08 |
| 29 | .10 | 2.89 | 2.50 | 2.28 | 2.15 | 2.06 | 1.99 | 1.93 | 1.89 | 1.86 | 1.83 | 1.73 | 1.68 | 1.64 | 1.62 | 1.58 | 1.55 | 1.52 | 1.47 | 1.47 |
| | .05 | 4.18 | 3.33 | 2.93 | 2.70 | 2.55 | 2.43 | 2.35 | 2.28 | 2.22 | 2.18 | 2.03 | 1.94 | 1.89 | 1.85 | 1.81 | 1.75 | 1.71 | 1.65 | 1.65 |
| | .025 | 5.59 | 4.20 | 3.61 | 3.27 | 3.04 | 2.88 | 2.76 | 2.67 | 2.59 | 2.53 | 2.32 | 2.21 | 2.14 | 2.09 | 2.03 | 1.96 | 1.90 | 1.82 | 1.82 |
| | .01 | 7.60 | 5.42 | 4.54 | 4.04 | 3.73 | 3.50 | 3.33 | 3.20 | 3.09 | 3.00 | 2.73 | 2.57 | 2.48 | 2.41 | 2.33 | 2.23 | 2.16 | 2.16 | 2.05 |
| 30 | .10 | 2.88 | 2.49 | 2.28 | 2.14 | 2.05 | 1.98 | 1.93 | 1.88 | 1.85 | 1.82 | 1.72 | 1.67 | 1.63 | 1.61 | 1.57 | 1.54 | 1.51 | 1.46 | 1.46 |
| | .05 | 4.17 | 3.32 | 2.92 | 2.69 | 2.53 | 2.42 | 2.33 | 2.27 | 2.21 | 2.16 | 2.01 | 1.93 | 1.88 | 1.84 | 1.79 | 1.74 | 1.70 | 1.63 | 1.63 |
| | .025 | 5.57 | 4.18 | 3.59 | 3.25 | 3.03 | 2.87 | 2.75 | 2.65 | 2.57 | 2.51 | 2.31 | 2.20 | 2.12 | 2.07 | 2.01 | 1.94 | 1.88 | 1.80 | 1.80 |
| | .01 | 7.56 | 5.39 | 4.51 | 4.02 | 3.70 | 3.47 | 3.30 | 3.17 | 3.07 | 2.98 | 2.70 | 2.55 | 2.45 | 2.39 | 2.30 | 2.21 | 2.13 | 2.13 | 2.02 |
| 40 | .10 | 2.84 | 2.44 | 2.23 | 2.09 | 2.00 | 1.93 | 1.87 | 1.83 | 1.79 | 1.76 | 1.66 | 1.61 | 1.57 | 1.54 | 1.51 | 1.47 | 1.43 | 1.38 | 1.38 |
| | .05 | 4.08 | 3.23 | 2.84 | 2.61 | 2.45 | 2.34 | 2.25 | 2.18 | 2.12 | 2.08 | 1.92 | 1.84 | 1.78 | 1.74 | 1.69 | 1.64 | 1.59 | 1.52 | 1.52 |
| | .025 | 5.42 | 4.05 | 3.46 | 3.13 | 2.90 | 2.74 | 2.62 | 2.53 | 2.45 | 2.39 | 2.18 | 2.07 | 1.99 | 1.94 | 1.88 | 1.80 | 1.74 | 1.65 | 1.65 |
| | .01 | 7.31 | 5.18 | 4.31 | 3.83 | 3.51 | 3.29 | 3.12 | 2.99 | 2.89 | 2.80 | 2.52 | 2.37 | 2.27 | 2.20 | 2.11 | 2.02 | 1.94 | 1.82 | 1.82 |
| 60 | .10 | 2.79 | 2.39 | 2.18 | 2.04 | 1.95 | 1.87 | 1.82 | 1.77 | 1.74 | 1.71 | 1.60 | 1.54 | 1.50 | 1.48 | 1.44 | 1.40 | 1.36 | 1.30 | 1.30 |
| | .05 | 4.00 | 3.15 | 2.76 | 2.53 | 2.37 | 2.25 | 2.17 | 2.10 | 2.04 | 1.99 | 1.84 | 1.75 | 1.69 | 1.65 | 1.59 | 1.53 | 1.48 | 1.40 | 1.40 |
| | .025 | 5.29 | 3.93 | 3.34 | 3.01 | 2.79 | 2.63 | 2.51 | 2.41 | 2.33 | 2.27 | 2.06 | 1.94 | 1.87 | 1.82 | 1.74 | 1.67 | 1.60 | 1.49 | 1.49 |
| | .01 | 7.08 | 4.98 | 4.13 | 3.65 | 3.34 | 3.12 | 2.95 | 2.82 | 2.72 | 2.63 | 2.35 | 2.20 | 2.10 | 2.03 | 1.94 | 1.84 | 1.75 | 1.62 | 1.62 |
| 100 | .10 | 2.76 | 2.36 | 2.14 | 2.00 | 1.91 | 1.83 | 1.78 | 1.73 | 1.69 | 1.66 | 1.56 | 1.49 | 1.45 | 1.42 | 1.38 | 1.34 | 1.29 | 1.22 | 1.22 |
| | .05 | 3.94 | 3.09 | 2.70 | 2.46 | 2.31 | 2.19 | 2.10 | 2.03 | 1.97 | 1.93 | 1.77 | 1.68 | 1.62 | 1.57 | 1.52 | 1.45 | 1.39 | 1.30 | 1.30 |
| | .025 | 5.18 | 3.83 | 3.25 | 2.92 | 2.70 | 2.54 | 2.42 | 2.32 | 2.24 | 2.18 | 1.97 | 1.85 | 1.77 | 1.71 | 1.64 | 1.56 | 1.48 | 1.36 | 1.36 |
| | .01 | 6.90 | 4.82 | 3.98 | 3.51 | 3.21 | 2.99 | 2.82 | 2.69 | 2.59 | 2.50 | 2.22 | 2.07 | 1.97 | 1.89 | 1.80 | 1.69 | 1.60 | 1.45 | 1.45 |
| 1000 | .10 | 2.71 | 2.31 | 2.09 | 1.95 | 1.85 | 1.78 | 1.72 | 1.68 | 1.64 | 1.61 | 1.49 | 1.43 | 1.38 | 1.35 | 1.30 | 1.25 | 1.20 | 1.08 | 1.08 |
| | .05 | 3.85 | 3.00 | 2.61 | 2.38 | 2.22 | 2.11 | 2.02 | 1.95 | 1.89 | 1.84 | 1.68 | 1.58 | 1.52 | 1.47 | 1.41 | 1.33 | 1.26 | 1.11 | 1.11 |
| | .025 | 5.04 | 3.70 | 3.13 | 2.80 | 2.58 | 2.42 | 2.30 | 2.20 | 2.13 | 2.06 | 1.85 | 1.72 | 1.64 | 1.58 | 1.50 | 1.41 | 1.32 | 1.13 | 1.13 |
| | .01 | 6.66 | 4.63 | 3.80 | 3.34 | 3.04 | 2.82 | 2.66 | 2.53 | 2.43 | 2.34 | 2.06 | 1.90 | 1.79 | 1.72 | 1.61 | 1.50 | 1.38 | 1.16 | 1.16 |

試題隨卷繳交