

系所組別： 國際企業研究所乙組

考試科目： 統計學

考試日期：0306，節次：3

※ 考生請注意：本試題 可 不可 使用計算機

Please show all your work.

1. (10%) A man makes 100 check transactions between receiving his February and March bank statements. Rather than subtract the amounts he spends exactly, he rounds off each checkbook entry to the nearest dollar. Use Chebyshev's inequality to get an upper bound for the probability that the man's accumulated error (either positive or negative) after his 100 transactions is \$5 or more.
2. (10%) Please state and discuss the properties of the disturbance in a classical simple regression model.
3. (10%) Please show your understanding of (1) a random variable; (2) the standard normal distribution. (5% for each question)
4. (10%) Under what situations, you may wish to use the one-tailed hypothesis test and the two-tailed hypothesis test, respectively? Please state the situations and also illustrate examples to answer this question.
5. (10%) Please explain the following terms: (1) a level of significance; (2) the standard error. (5% for each question)
6. (10%) Please describe (1) the law of large numbers; (2) the central limit theorem. (5% for each question)
7. (10%) Please explain the following terms: (1) a p -value; (2) an efficient estimator of a parameter. (5% for each question)
8. (10%) Please explain the following terms: (1) a coefficient of determination; (2) a correlation coefficient. (5% for each question)
9. (10%) (1) Please define serial correlation. (2) What are the consequences of serial correlation? (5% for each question)
10. (10%) An urn contains five balls, two red and three white. Assume that two are drawn out at random, without replacement. Let X denote the number of red balls in the sample. Find the variance of X .