國立成功大學
110學年度碩士班招生考試試題

編　號：161

系　所：自然災害減災及管理國際碩士學位學程

科　目：統計學

日　期：0202

節　次：第 3 節

備　註：不可使用計算機

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※ 考生請注意：本試題不可使用計算機。　請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

If there is an item in the formula that needs to calculate the value of the root sign, it is not necessary to calculate the correct value, just estimate the approximate value or write the value still with the root sign.

一、(15%) This is an age list of the unfortunate victims in a certain disaster, arranged in order from smallest to largest: 5 8 9 13 14 16 23 26 28 33 39 61. Find the median, first quartile, and third quartile of these counts.

二、(15%) A survey consisting of a random sample of 1523 adult Taiwanese found that 57% have been sick in the past 12 months. Find a 95% confidence interval for the proportion of all adult Taiwanese who have been sick in this time period. How would you interpret this interval?

	Observed	
	Smoker	Nonsmoker
Alive	139	230
Dead	443	502

三、(23%) An observational study was conducted to examine the relationship between smoking and survival. Based on a survey conducted in England in 1972–1974, 1314 women were classified as either smokers or nonsmokers. In 1996, the researchers determined which of these women was still alive. The following table classifies the women by smoking status at the time of the original survey and by survival in 1996. Find the chi-square statistic.

四、(20%) A drug manufacturer is concerned over the possibility that a new medication might have the undesirable side-effect of elevating a person's body temperature. The medication will be marketed if the manufacturer could be quite sure that the mean temperature of healthy individuals after they take the medication would be 98.6 degrees Fahrenheit or less; otherwise, it will be withheld. The drug is administered to a random sample of 60 healthy individuals, and the sample mean temperature and sample variance are 98.4 and .38, respectively. Assuming that the distribution of temperatures is normal, can the drug manufacturer market the drug in light of the sample information?

五、(27%) Suppose that a safety expert is interested in the relationship between the number of licensed vehicles in a community and the number of accidents per year in that community. In particular, the expert wishes to use the number of licensed vehicles to predict the number of accidents per year. A random sample of 10 communities yields the results shown in Table below.

1. Estimate the sample correlation coefficient.
2. Determine and draw the regression line of accident numbers on licensed vehicles.

i *Community*	x_i *Licensed vehicles (thousands)*	y_i *Number o accidents (hundreds)*
1	4	1
2	10	4
3	15	5
4	12	4
5	8	3
6	16	4
7	5	2
8	7	1
9	9	4
10	10	2
	96	30