編號： 524　系所：公共衛生研究所甲組一般生　　科目：生物統計學

本試題是否可以使用計算機：☑可使用，□不可使用　（請命題老師勾選）

Q1. The speeds (in mph) of 16 cars on a highway were observed to be
58 56 60 57 52 54 54 59 63 54 53 **5**4 58 56 57 67

(1) Find the mean, mode, median and mean for this set of data. (15 points)

(2) Find the variance, standard deviation, and coefficient of variation for this set of data. (15 points)

(3) Find the 25th percentile , 75th percentile and interquartile range for this set of data. (15 points)

(4) Draw a box-and-whisker plot for this set of data. (1**5** points)

Q2. Sternberg et al (1982) reported the results from a study involving 25 hospitalized schizophrenic patients classified as either " psychotic" or "non-psychotic". Samples of cerebrospinal fluid were taken from each patient and assayed for the dopamine b-hydroxylase (DBH) activity with the following results (the units being nmol/(ml)(h)(mg)of protein)

obs	**Judged nonpsychotic**	obs	**Judged psychotic**
1	0.0104	1	0.015
2	0.0105	2	0.0204
3	0.0112	3	0.0208
4	0.0116	4	0.0222
5	0.013	5	0.0226
6	0.0145	6	0.0245
7	0.0154	7	0.027
8	0.0156	8	0.0275
9	0.017	9	0.0306
10	0.018	10	0.032
11	0.02		
12	0.02		
13	0.021		
14	0.023		
15	0.0252		

The question of interest is whether the psychotic and non-psychotic patients have different DBH levels.

(1) Please compute a 95% confidence interval for the difference in mean DBH levels between the psychotic and non-psychotic patients. (20 points)

(2) Please test the hypothesis of equal mean DBH levels between the groups. (20 points)

Note: The upper 2.5th percentile for the student-t distribution with 23 degrees of freedom is 2.069.