Prince Sultan University
STAT 101
Major I Examination
Spring Semester 2008, Term 082
Tuesday, April 7, 2009
Dr. Quazi Abdus Samad

Time Allowed**: 90 minutes**

Name: _____ _____ _____
(First) (Middle) (Last)

ID Number: _____

Section No.: _____

Important Instructions*:*

You may use CASIO scientific calculator that does not have programming or graphing capabilities.
You may **NOT borrow** a calculator from anyone.
There should be **NO talking** during the examination.
Your exam will be taken **immediately** without any warning if your mobile is seen or heard
You must show all your work beside the problem. Be organized.
You may use the back of the pages for extra space, but be sure to indicate that on the page with the problem.
This examination has **07** problems with several parts in each case. Make sure that your paper has all these problems.

Problems	Max points	Student's Points
1	10	
2	05	
3	10	
4	12	
5	05	
6	12	
7	06	
Total	**60**	

Question 1 (10 points) A high school band teacher has a record of each student's absence. The results, in days, are:

3, 4, 7, 2, 2, 1, 0, 0, 3, 2, 1, 6, 1, 0, 1, 5, 3, 1, 0, 1, 2, 4

a. Summarize the data using frequencies and relative frequencies.

b. What proportion of students has been absent less than 3 days?

c. How many students have been absent more than 5 days?

d. What proportion of students has been absent at least 2 days?

e. How many students have been absent at most 6 days?

Question 2 (5 points) A doctor is concerned that too many of her patients use tobacco. She conducted a survey of 200 randomly chosen patients and the results of her findings are shown below.

Tobacco use	Number of users	Relative frequency
Cigarette	40	
Pipe/Cigar	7	
Smokeless	22	
Any combination	35	
None	96	

a. Determine the relative frequencies (in the table above).

b. Construct a relative frequency bar chart.

c. What can you tell about the shape of the distribution of the relative frequencies?

Question 3 (10 points) Aqua running has been suggested as a method of cardiovascular condition for for injured athletes and others who want a low impact aerobics program. A study reported in the Journal of Sports Medicine investigated the relationship between exercise cadence and heart rate by measuring the heart rates of 15 healthy volunteers at a choice of 48 cycles per minute. The data are listed here:

87 109 79 95 90 92 96 101 91 78 112 94 98 94 107

a. Construct a stem and leaf plot to describe the data (**Show all steps**).

b. Discuss the shape of the data set.

c. Construct a relative frequency histogram **using 5 classes** (**Show all steps**)

d. Do the questions in **b** and **c** above lead you to the same result? **Explain**.

Question 4 (12 points) a. Construct a box plot for these data and identify any outliers (**Show all steps**).

25 22 23 27 26 28 18 25 24 12

b. Compute the z-scores for the smallest and largest observations.

c.Identify any ouliers.

d. Do the results in **a** and **c** match? **Why or why not**?

Question 5 (5 points) The frequency distribution shows the number of pounds of each snack food eaten during the Super Bowl.

Snack	**Pounds (frequency)**
Potato chips	11.2 million
Tortilla chips	8.2 million
Pretzels	4.3 million
Popcorn	3.8 million
Snack nuts	2.5 million
Total	n = 30.0 million

a. What is the variable being measured? Is it qualitative or quantitative?

b. Construct a pie chart to describe the data (**Show all steps**).

c. What proportion of people prefers potato chips or tortilla chips?

Question 6 (12 Points) A sample of eight doctors was asked how many flu shots they had given to patients this fall. The numbers of flu shots were:

6, 3, 5, 24, 2, 6, 0, 8

a. Find the sample mean.

b. Find the median.

c. Find the sample variance **using the computing formula.**

d. Find the sample standard deviation **using the computing formula.**

e. Find the range of the observations

f. Find the range approximation to s.

g. Show using the data above the proportion of measurements that fall in the interval $x \pm 2s$ (use value of **s** obtained from part **d** above). Which rule does it follow and why?

h. Show using the data above the proportion of observations that fall in the interval $x \pm 3s$ (use value of **s** obtained from part **d** above). Which rule does it follow and why?

Question 7 (6 points) Male and female respondents to a questionnaire about gender differences are categorized into three groups according to their answers as shown below:

Gender	*Group 1*	*Group 2*	*Group 3*
Men	52	36	62
Women	17	40	43

a. Create a side-by-side bar chart to describe these data.

b. Create a stacked bar chart to describe these data.

c. Which graph do you prefer and why?