KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICAL SCIENCES
DHAHRAN, SAUDI ARABIA

STAT 211: BUSINESS STATISTICS I
Semester 052
Major Exam #1-A
Sunday March 19, 2006

Please **circle** your instructor's name: Dr. Walid Abu-Dayyeh
Dr. Mohammad Omar
Marwan Al-Momani

Name: ID#   Section: Serial:

Question No	Full Marks	Marks Obtained
1	9	
2	9	
3	8	
4	6	
5	13	
6	7	
7	18	
Total	70	

Question.1 *(9 points)*

Answer <u>True or False</u>

1. The editor of a local newspaper estimated the percentage of subscribers who read the paper's editorials, and found that 75% of them read it, then this percentage is considered as a parameter.   _____F_____

2. The yearly size of Saudi population since 1980 is a time series data.   _____T_____

3. The graph used to show the relation between two variables is the frequency histogram.   ____F_____

4. Frequency distributions are specifically for analyzing continuous data. ____F_____

5. Populations with larger means will also have larger standard deviations._____F_____

6. The mode can be used for both qualitative and quantitative data.   _____T____

Question.2 *(9 points)*

Answer the following questions by choosing the <u>right answer</u>.

1. When an administrator at a local hospital prepares a series of charts and graphs pertaining to the number of patients who stayed at the hospital during the past month, he is using which of the following general categories?
    a. Quantitative statistics
    b. Inferential statistics
    c. **Descriptive statistics**
    d. None of the above.

2. Suppose that Al-Dhahran Mall conducted a survey of its employees to determine their level of satisfaction with various Mall policies. The data collected from this survey are:
    a. **Primary data**.
    b. Secondary data.
    c. Experimental data.
    d. None of the above.

3. If you want to track the closing stock price over time at Saudi market, which of the following is the graph you will produce?
    a. Bar chart
    b. Histogram
    c. Scatter diagram
    d. **Line chart**

4. A bar chart is most likely used to display which of the following?
   a. A continuous variable
   b. A nominal level variable
   c. An ordinal level variable
   d. Either b or c

5. A sample data of incomes have been collected from Saudi citizens, then the shape of the data is
   a. Symmetric
   b. Skewed to the right
   c. Skewed to the left
   d. Undetermined

6. Suppose that in the major exam of STAT-211 a student got 42 out of 50, and it was reported back to him that his score is at the 80th percentile. Therefore:
   a. 80 students who took the test scored below his grade.
   b. The student scored as high or higher than 80 percent of the student who took the major exam
   c. The student's grade was in the bottom 20 percent of the students' grades.
   d. 20 students who took the test scored below his grade.

Question.3 *(2 +6 = 8 points)*
An army battalion consisting of 10 generals, 70 captains and 1000 soldiers occupied a certain city. Suppose that you want to study their feelings after occupation of the city by taking a random sample of the battalion, then answer the following questions:

a) Which sample scheme is suitable to be used?

   Stratified Random Sample

b) Explain how to obtain a random sample of size 108 in part (a).
   The sample should contain: 1 generals, 7 captains and 100 soldiers

Question.4 *(6 points)*
Write the steps involved in developing and carrying out a written survey.

Question.5 *(4 + 1+ 6 + 2 = 13 points)*
The closing price of Yahoo Inc. stock prices listed at Bloomberg Inc. website for the last
31 days in 2005 is reproduced below

Day	1	2	3	4	5	6	7	8	9	10	
Close	4004	4223	4154	4227	4236	4250	4213	4111	4019	4023	
Day	11	12	13	14	15	16	17	18	19	20	
Close	4107	4121	4047	4019	4011	4035	4031	4008	4120	4130	
Day	21	22	23	24	25	26	27	28	29	30	31
Close	4175	4232	4105	4068	4047	4083	4063	3994	4025	3956	3918

   Ahmad, a student in STAT211 who follows this stock in his free time, is interested in
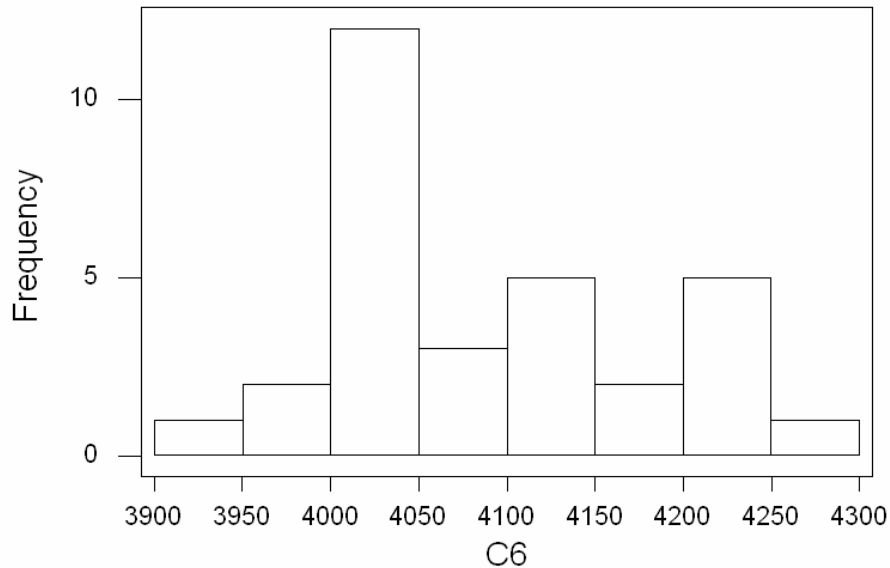   describing the above data.
a. Ahmad started the following frequency distribution of the Yahoo Inc. closing stock
   prices. Complete the frequency distribution.

Classes for closing Price	Frequency
[3900, 3950)	1
[3950, 4000)	2
[4000, 4050)	12
[4050, 4100)	3
[4100, 4150)	5
[4150, 4200)	2
[4200, 4250)	5
[4250,4300)	1

b. From the frequency distribution which class has the highest frequency?

[4000, 4050)

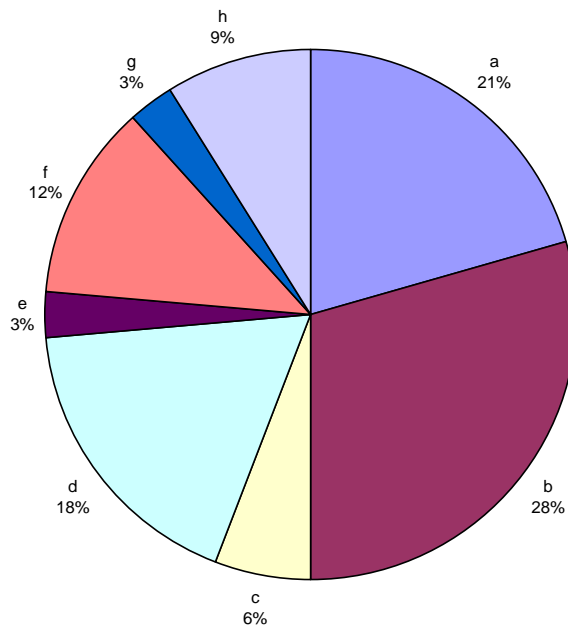**c.** Draw the histogram of the above data, and <u>describe its shape.</u>

d. What is the percentage of days the Yahoo Inc. closing stock price above 4050?

$$\frac{13}{31}(100\%) = 42\%$$

Question.6 *(1+ 2 + 1+ 2+1 = 7 points)*
Below is a typical Monday schedule for a sophomore student, Bilal, who obtained an **A+** grade for STAT211 last semester.

Activities	Amount of time spent on activity (in hours)
Attend lectures or visit instructors	3.5
Study for courses and Do homework	5
Play sport Eating or personal hygiene	1
Spend time with friends or family	3
SMS messages or telephone	0.5
Watch TV, Internet surfing or emailing	2
Driving	0.5
Religious duties	1.5

a. What is the name of the chart?   Pie Chart

b. How much time (in percentages) does he spend on activities related to studying?
                                              50%

c. What is the type of the data above?

Bivariate data: activity is categorical and time is continuous

d. Label activities (a) and (b) in the chart above.
                a: Attend lectures or visit instructors
                b: Study for courses and Do homework

e. Name another graph that can be used to describe this data.

Question.7 *(1 + 1+ 2 + 2+ 3 +4+5 = 18 points)*
The following represent the profits (in millions SR) of a company in the previous 12 months

1.69	1.37	0.92
1.58	1.75	0.72
2.11	1.92	2.46
1.64	1.47	1.93

a. What is the name of the variable?   **Monthly profit**

b. What is the type of this variable?   **Continuous**

c. For this data, compute the following:

    I. Mean
      1.630

   II. Median
      1.665

  III. P_{80} (the 80th percentile)
$$\frac{80}{100}(12+1)=10.4$$

$$\textit{implies that} \quad P_{80} = X_{(10)} + (10.4-10)(X_{(11)} - X_{(10)})$$

$$=1.93+0.4(2.11-1.94)=1.93+0.068=1.998$$

  IV. The standard deviation

      0.480

d. Draw the stem and leaf plot for this data and **<u>comment</u>** on the shape of this data.

          0 79
          1 34566799
          2 14

          Symmetric