KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

DEPARTMENT OF MATHEMATICAL SCIENCES
DHAHRAN, SAUDI ARABIA

STAT 211: BUSINESS STATISTICS I

Major Exam 1, Semester- 132, Year 2014
Time: 6:00 pm to 7:30 pm, Wednesday, 5th March, 2014

Student Name: **ID #**

Tick (√) the box below corresponding to your Class **Section, Time, and Instructor**:

Tick	Section	Time	Instructor
	1	0900 to 0950	M Riaz
	2	1100 to 1150	A H Joarder

Answer all questions. Show all work on solving problems.
*You are allowed to use any scientific/electronic calculator. Mobiles are **NOT** allowed.*

Question No	Marks	Marks Obtained	Comment
1	7		
2	9		
3	14		
4	10		
Total	40		

Q1. (4+1+ 1+1= 7 points).
The daily sales (in 000 Riyals) for five grocery stores in the Eastern Province are:

Store	**Sales**
Carrefour	400
Geant	250
Hyperpanda	350
Farm 9	270
Tamimi	260

a. Given the information in the table, construct a Pareto chart to compare the sales of these five stores.

b. Which company has the **maximum** monthly sales?

c. What **kind of data** is displayed in the pie chart you created in part (a)?

d. What percentage of sales do **Panda and Farms together** make?

Q.2. (6+3=9 points).

a). Encircle T for True and F for False statements.

I. Mr. Ali collected data on sales from super stores for his research study. He was personally involved in the data collection effort, so he is using a secondary data. **(T, F)**

II. b. Data collected on daily temperatures in Jeddah in the month of January would be an ratio level variable. **(T, F)**

III. For a positively skewed data, mean is always smaller than median. **(T, F)**

IV. Mode is defined as the least repeated value in a data. **(T, F)**

V. According to empirical rule, Mean $\pm$ 2(Standard Deviation) contains 90% of the data values. **(T, F)**

VI. Coefficient of variation is measured in the same unit as that of the data values. **(T, F)**

b). Following is the MINITAB output for a data:

Descriptive Statistics

Variable	N	Mean	Median	Tr Mean	StDev	SE Mean
C1	10	79.08	79.15	79.06	4.10	1.30

Variable	Min	Max	Q1	Q3
C1	72.50	85.80	75.83	82.12

Using this output, provide the answers to the following:

Inter-quartile Range (IQR)= ----------

Range (R)= ----------

Shape of the data is ----------

Q3. **(2+2+3+5+2=14 points).** The monthly salaries (in thousands of Riyal) of the top ten executives of a reputed business company are given below:

71.1	71.3	72.5	72.7	70.9
76	70.2	73.7	71.6	73.5

a. Calculate the **mean** and **standard deviation** of the data.

b. Determine the **coefficient of variation** and **interpret** your result.

c. Construct a stem and leaf plot representing the salaries, and comment on the shape of the data.

d. Provide five number summary measures for the salaries data. Also graph these measures in the form an appropriate plot based on these summary measures.

e. Are there any outliers in the salaries data? If so, find these outliers.

Q4. (2+3+3+1+1=10 points).

A survey of subscribers to *Fortune* magazine asked the following question: "How many of the last four magazine issues have you read?" Suppose that the following frequency distribution summarizes the 500 responses.

Number Read (X)	Frequency (f)
0	50
1	75
2	100
3	125
4	150
Total	500

a. For the "number of issues read" by a *Fortune* subscriber write the following:

type of data ----------

Scale of measurement ----------

b. For the number of issues read by the *Fortune* subscriber, compute the following measures and explain them.

Mean:

Mode:

c. Complete the following table using the information of the table given above.

Number Read	Frequency	Percentage Frequency	Cumulative Percentage Frequency
0	50		
1	75		
2	100		
3	125		
4	150		

d. What is 70^{th} percentile for the number of issues read by the *Fortune* subscriber?

e. What is the cumulative percentage for the number of issues read by the *Fortune* subscriber that corresponds to 2?

Formulae for STAT211 Major 1

Average and variance are

$$\bar{x} \equiv \frac{1}{n}\sum x; \quad s^2 \equiv \frac{s_{xx}}{n-1}, \text{ where } s_{xx} \equiv \sum (x-\bar{x})^2 = \sum x^2 - \frac{1}{n}\left(\sum x\right)^2 = \sum x^2 - n\bar{x}^2;$$

Mean and the variance for grouped data:

$$\bar{x} \equiv \frac{1}{n}\sum xf; \; s^2 \equiv \frac{s_{xx}}{n-1} \text{ where } s_{xx} \equiv \sum x^2 f \; - \frac{1}{n}\left(\sum xf\right)^2 = \sum fx^2 - n\bar{x}^2;$$

where $x's$ are the mid values of each class and the sum is over the number of classes.

Standardized score of an observation x is $z(x) \equiv (x-\bar{x})/s$.

Coefficient of Variation : $CV \equiv s/\bar{x}$.