KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

DEPARTMENT OF MATHEMATICS & STATISTICS

DHAHRAN, SAUDI ARABIA

STAT 201: INTRODUCTORY STATISTICS

Semester 121
Major Exam One
October 2, 2012
Allowed time 75 minutes

Name: Student ID#: Serial #:

Directions:

1) You must **show all work** to obtain full credit for questions on this exam.
2) **DO NOT round** your answers at each step. Round answers only if necessary at **your final step to 4 decimal places**.
3) You are allowed to use electronic calculators and other reasonable writing accessories that help write the exam. Try to define events, formulate problem and solve.
4) Do not keep your mobile with you during the exam, turn off your mobile and leave it aside

Question No	Full Marks	Marks Obtained
Q1	10	
Q2	30	
Q3	12	
Q4	9	
Q5	9	
Q6	10	
Total	60	

Question One (10 points)

The 34 students who attended the Statistics course during last summer they achieved the following grades:

C, C, B, C, A, C, C, B, A, D, B, B, A, D, B, B, A, B, C, D, A, D, C, C, F, C, D, C, A, A, A, F, C, A.

1. Construct a frequency distribution for the data.

2. Construct a bar chart for the frequency distribution.

3. Find the suitable measure of central tendency.

4. What are your final conclusions about the grad of the students?

Question Two (30 points)

A traffic inspector has counted the number of automobiles passing a certain point in 30 successive 20-minute time periods. The observations are listed below

23	20	16	18	30	22	26	15	5	18
14	17	11	35	21	6	10	20	22	25
19	19	19	20	12	23	24	17	18	16

1. Construct a stem and leaf plot, comment on the shape.

2. Check the empirical rule for the given dataset.

3. Which is the better measure of center for these data, the mean or the median? Explain.

4. Prepare a frequency distribution. Then approximate the standard deviation.

5. Draw the relative frequency curve. Comment on the shape.

6. Construct The Box plot. Comment on variability of the data set.

Question Three (12 points)

According to a recent market research survey conducted on behalf of a general insurance group, 40% of males over the age 30 own both car and a house, 60% own a house and 70% own a car.

a. What is the probability that a man over age 30, chosen at random, owns a house, or a car, or both?

b. What is the probability that a man over age 30, chosen at random, owns a house and he does not own a car?

c. What is the probability that a man over age 30, chosen at random, owns a house given that he owns a car?

d. Let the two events A: the man owns a house, B: the man owns a car
   a. Are they mutually exclusive? Explain

   b. Are they independent? Explain

Question Four (6 points)

Suppose that two people are randomly chosen from a group of 4 women and 6 men.

1. What is the probability that both are men?

2. What is the probability that one is a woman and the other a man?

3. What is the probability that more than one woman?

Question Five (6 points)

The probability that a forward player scores a goal when shooting is 0.4. A football team has three forward players. Find the following probabilities

1. They all score?

2. They all miss?

3. At least one scores?

Question Six (10 points)

A manufacturer makes two models of an item:
Model I, which accounts for 80% of the unit sales.
Model II, which accounts for 20% of the unit sales.
Because of defects, manufacturer has to replace (or exchange) 10% of its model I and 18% of its model II.

1. If a unit is selected at random, find the probability that it will be defective.

2. Given that the selected unit is defective, what is the probability that the unit from model I?