KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICS & STATISTICS
DHAHRAN, SAUDI ARABIA

STAT 211: Statistics for Business I
Semester 152
First Major Exam
Wednesday July 27, 2016
8:00 − 10:00 pm

Name: ID #:

Question No	Full Marks	Marks Obtained
1	**22**	
2	**05**	
3	**06**	
4	**05**	
5	**06**	
6	**04**	
Total	**48**	

Note:

1. Define all the events in every question of probability.
2. Show all the calculation steps. There are points for steps so if your miss them, you would lose points.

Q.No.1:- (22 points) Answer the following questions:

I. A wall street journal poll asked 2150 adults in the KSA a series of questions to find out their view on the KSA economy.

i. The possible response to the question "In which year do you think the last recession in the KSA started" result in
   a) a nominal scale variable
   b) an ordinal scale variable
   c) an interval scale variable
   d) a ratio scale variable

ii. The possible response to the question "What do you think is the current number of people unemployed in the country" are values from
   a) discrete numerical variable
   b) continuous numerical variable
   c) categorical variable
   d) table of random numbers

iii. The possible response to the question "How satistied are you with the KSA economy today with 1=vary satisfied, 2=moderately satisfied, 3=neutral, 4=moderately dissatisfied, 5=very dissatisfied" result in
   a) a nominal scale variable
   b) an ordinal scale variable
   c) an interval scale variable
   d) a ratio scale variable

iv. The possible response to the question "How many out of every 10 KSA residents do you think feel that KSA economy is in a good shape?" result in
   a) a nominal scale variable
   b) an ordinal scale variable
   c) an interval scale variable
   d) a ratio scale variable

II. Which of the following is most likely a parameter and not a statistic?
   a) The average score of the first five students completing an assignment
   b) The proportion of female drivers in a country
   c) The average height of people randomly selected from a database
   d) The proportion of trucks stopped yesterday for bad brakes

III. The table below contains the opinion of a sample of 200 people (categorized by gender) about plans to change the business policies in KSA.

	Favor	**Neutral**	**Against**	Total
Female	38	54	12	104
Male	12	36	48	96
Total	50	90	60	200

Fill in the following blanks:

i. _____ percent of the 200 who were females and were either neutral or against the plan.

ii. _____ percent of the 200 who were males and were not against the plan.

iii. _____ percent of the 200 were not neutral.

iv. Of those neutral in the sample, _____ percent were male.

v. Of males in the sample, _____ percent were against the plan.

IV. The Stem-and-Leaf display below contains data on the number of minutes (rounded) between the patients entering the clinic and when they enter the doctor room.

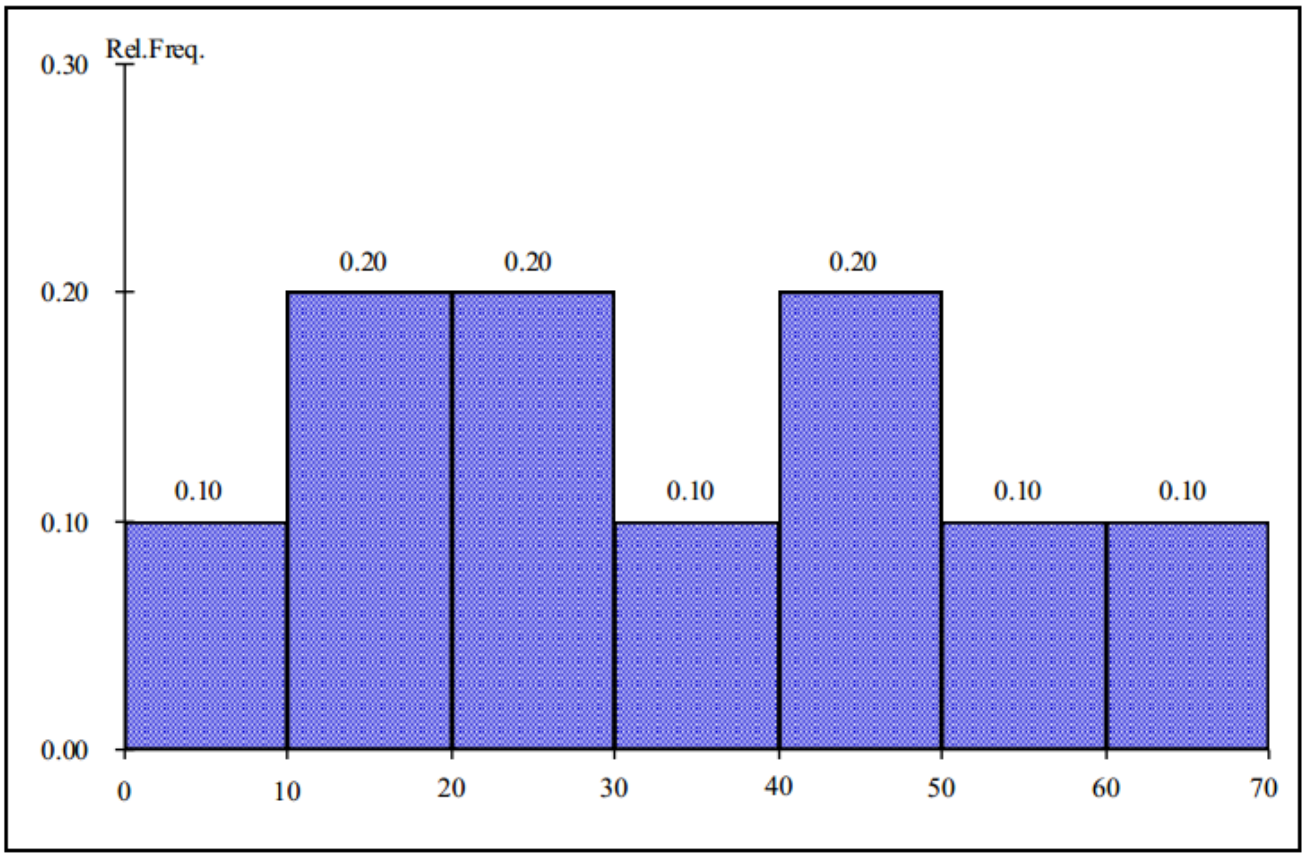
Stem	**Leaves**
1	2 3 4 4 4 7 8 9 9
2	2 2 2 2 3 4 5 5 6 7 8 8 8 9
3	0 0 1 1 13 5 7 7 8
4	0 2 3 4 5 5 7 9
5	1 1 2 4 6 6
6	1 5 8

Fill in the following blanks:

i. The patient with the forth shortest time between entering the clinic and when he/she enters the doctor room had a wait of _____ minutes.

ii. _____ percent of the patients were checked by the doctor within first hour.

V. The histogram below represents scores achieved by 200 job applicants on a personality profile.



Fill in the following blanks:

i. _____ percent of the job applicants scored between 10 and 20.

ii. _____ percent of the job applicants scored below 50.

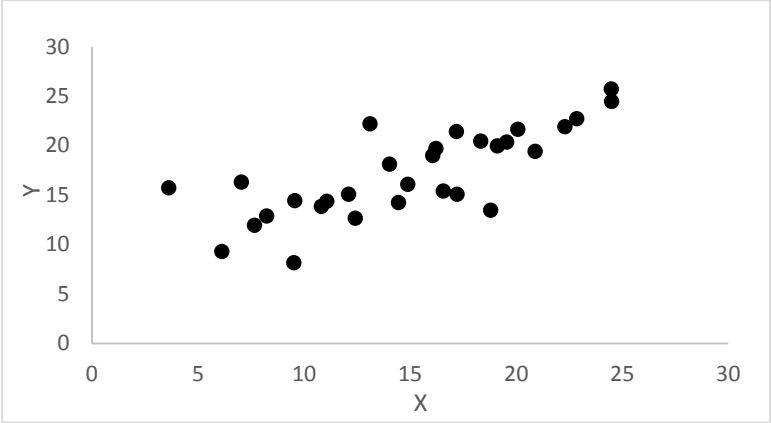
iii. The number of job applicants who scored between 30 and 60 is _____.

iv. 90% of the job applicants scores above or equal to _____.

VI. Which of the following is not a measure of central tendency?

a) Arithmetic Mean
b) Median
c) Q_3
d) Geometric Mean
e) Mode

VII. Following is a scatter plot for two variables X and Y.



Which value of correlation coefficient most closely explains the above scatter plot?

a) -0.99
b) -0.77
c) 0
d) 0.77
e) 0.99

VIII. In right-skewed distributions, which of the following is the correct statement?

a) The distance from Q_1 to Q_2 is greater than the distance from Q_2 to Q_3.
b) The distance from Q_1 to Q_2 is less than the distance from Q_2 to Q_3.
c) The arithmetic mean is less than the median.
d) The mode is greater than the arithmetic mean.

IX. Which of the following is not sensitive to outliers/extreme values?

a) The range
b) The standard deviation
c) The interquartile range
d) The coefficient of variation

X. The median of the values 3.4, 4.7, 1.9, 7.6 and 6.5 is _____.

XI. If the two events A and B are mutually exclusive and collectively exhaustive, what is the probability that event A occurs?

a) 0.
b) 0.5.
c) 1.00.
d) Cannot be determined from the information given.

Q.No.2:- (3+2 = 5 points) According to a Gallup Poll, companies with employees who are engaged with their workplace have greater innovation, productivity, and profitability, as well as less employee turnover. A survey of 1,895 workers in Germany found that 18% of the workers were engaged, 54% were not engaged, and 28% were actively disengaged. The survey also noted that 29% of engaged workers strongly agreed with the statement "My current job brings out my most creative ideas." Only 10% of the not engaged workers and 5% of the actively disengaged workers agreed with this statement.

a) If a worker is selected randomly (from these 1895 workers), what is the probability that the worker agrees with the statement "My current job brings out my most creative ideas?"

b) If a worker is known to strongly agree with the statement "My current job brings out my most creative ideas," what is the probability that the worker is engaged?

Q.No.3:- (2+2+2 = 6 points) A municipal bond service has three rating categories (A, B, and C). Suppose that in the past year, of the municipal bonds issued throughout the United States, 40% were rated A, 30% were rated B, and 30% were rated C. Of the municipal bonds rated A, 40% were issued by cities, 20% by suburbs, and 40% by rural areas. Of the municipal bonds rated B, 25% were issued by cities, 35% by suburbs, and 40% by rural areas. Of the municipal bonds rated C, 60% were issued by cities, 25% by suburbs, and 15% by rural areas.

a) If a new municipal bond is to be issued by a city, what is the probability that it will receive an A rating?

b) What proportion of municipal bonds are issued by cities?

c) What proportion of municipal bonds are issued by suburbs?

Q.No.4:- (5 points) The following is a set of data from a sample of $n = 11$ items:

X:	7	5	8	3	6	10	12	4	9	15	18
Y:	21	15	24	9	18	30	36	12	27	45	54

a) Compute the covariance.

b) Compute the coefficient of correlation.

c) How strong is the relationship between X and Y? Explain.

Q.No.5:- (2+2+2 = 6 points) The rate of return of an Internet Service Provider over a 10 year period are: 10.25%, 12.64%, 8.37%, 9.29%, 6.23%, 42.53%, 29.23%, 15.25%, 21.52%, -2.35%.

a) Compute the geometric mean rate of return per year.

b) Calculate the coefficient of skewness and comment on it.

c) Find the 70^{th} percentile.

Q.No.6:- (4 points) The probability that house sales will increase in the next 6 months is estimated to be 0.25. The probability that the interest rates on the housing loan will go up in the same period is estimated to be 0.74. The probability that house sales or interest rates will go up during the next 6 months is estimated to be 0.89. Find the probability that house sales will increase but interest rates will not during the next 6 months.