KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICS AND STATISTICS
Term 173

STAT 211 BUSINESS STATISTICS I
Second Exam
24 July 2018 at 4:30 PM- 6:00 PM

Name:_____ **ID #:**_____ **Srl #:**___

SECTION: 1 2

Important Notes:

1) You must **show all work** to obtain full credit for questions on this exam.
2) Define all the events in every question of probability.

Question No	Full Marks	Marks Obtained
Q1	5	
Q2	4	
Q3	10	
Q4	10	
Q5	8	
Q6	8	
Q7	5	
Total	*50*	

1. (2+1+2= 5 pts) The daily sale of gasoline is uniformly distributed between 2,000 and 5,000 gallons. Find the probability that sales are:

A. Find the probability that sales are Between 2,500 and 3,500 gallons

B. Find the probability that sales are Exactly 2,500 gallons.

C. Find the median daily sale of gasoline.

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2. (4 pts)The rate of return (X) on an investment is normally distributed with mean of 10% and standard deviation of 5%. **What is the probability of losing money?**

3. The service rate at a supermarket checkout is 6 customers per minute. If the service time is exponential, find the following probabilities:

A. (3 pts)A service is completed in 5 seconds.

B. (3 pts) A customer leaves the counter more than 10 seconds after arriving

C. (4 pts) What is the probability that 10 customers arrive the counter in 2 minutes.

4. The amount of soda in each bottle is normally distributed with a mean of 32.2 ounces and a standard deviation of 0.3 ounces.

A. (3 pts) Find the probability that a bottle bought by a customer will contain more than 32 ounces.

B. (3 pts) Find the 90^{-th} percentile for this distribution? What does it mean?.

C. (4 pts)Find the probability that a carton of four bottles will have a mean of more than 32 ounces of soda per bottle.

5. (4+4=8 pts) A state representative received 52% of the votes in the last election.One year later the representative wanted to study his popularity using a sample of 300 voters. If his popularity has not changed,

I. Using the normal approximation, what is the probability that 150 or more will vote for him?

II. What is the probability that the proportion of voters who will vote for him is at least 50.5%?

6. Firas is registered in a statistics course and intends to rely on luck to pass the next quiz. The quiz consists of 10 multiple choice questions with 5 possible choices for each question, only one of which is the correct answer. Firas will guess the answer to each question.

A. (3 pts) Find the probability that Firas gets two answers correct?

B. (3 pts) Find the probability that Firas fails the quiz?

C. (2 pts) If all the students in the class intend to guess the answers to the quiz, What is the mean and the standard deviation of the quiz mark?

7. (5 pts) The monthly sales at a computer store have a mean of $25,000 and a standard deviation of $4,000. Profits equal 30% of the sales minus fixed costs of $6,000. Find the mean and standard deviation of the monthly profit.