KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICS AND STATISTICS
Term 181

STAT 211 BUSINESS STATISTICS I
Second Exam
26 November 2018 at 5:15 PM

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

SECTION: 1 2 3

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	5	
Q4	6	
Q5	5	
Q6	5	
Q7	5	
Q8	9	
Q9	6	
Total	*50*	

1. (1+1+3=5 pts) Thirty percent of all households have a DVD player. If you select 20 houses at random:

(i) On average, how many houses of the twenty would you expect to have a DVD?

(ii) What is the standard deviation of the number of houses with a DVD?

(iii) What is the probability that two or fewer of them have a DVD player?

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2. (4 pts) In a box of 16 chocolates, there are four chocolates with coconut filling. What is the probability of choosing four chocolates, one or more of which have coconut filling?

3. (2+3=5 pts) On average, you receive 2.6 pieces of junk mail a day. Assume that the number of pieces of junk mail you receive each day follows the Poisson distribution.

(i) What is the probability that you receive exactly three pieces of junk mail today?

(ii) What is the probability of receiving at least one piece of junk mail in next one hour?

4. (3+3=6 pts) On average, One Customer arrive to the cashier at a gas station every ten minutes. Assume that the distribution of the time between customers follows an exponential distribution. Suppose that a customer has just left the cashier.

(i) What is the probability that the cashier at the gas station has more than 15 minutes before the next customer arrive?

(ii) The probability is 0.30 that the cashier has to wait at least how long or longer before the next customer arrives?

5. (5 pts) In a recent survey of high school students, it was found that the average amount of money spent on entertainment each week was normally distributed with a mean of $52.30. Suppose you are told that there is an 80% probability that a randomly-selected student spends somewhere between $49.74 and $54.86. What is the standard deviation of the amount of money spent by high school students monthly?

6. (5 pts) You are the Webmaster for your firm's Website. From your records, you know that the probability that a visitor will buy something from your firm is 0.23. If the number of visitors in one day is 952, **approximate** the probability that less than 200 of them will buy something from your firm?

7. (5 pts) It is estimated that 1.3% of all items produced on an assembly line have some form of defect. You randomly select 60 items for inspection. What is the probability that more than 1.5% of the 60 items have some form of defect?

8. (5+4=9 pts) In a recent survey of high school students, it was found that the average amount of money spent on entertainment each week was distributed with a mean of $52.30 and a standard deviation of $18.23. Assume that these values are representative of all high school students.

(i) What is the probability that for a sample of 36, the average amount spent exceeds $60?

(ii) The probability is 65% that the average spending of a sample of 36 randomly-selected students will be at least how much?

9. (3+3=6 pts) Consider the following game. You pay $1 to roll three dice and choose a number. If your number is rolled on any of the dice, you get your dollar back plus one dollar for each of the times your number came up.

Let X denote the number of times your number appear on the three dice.

1. Find the probability distribution of X.

2. On average, how much would you expect to win at this game?