Prince Sultan University
STAT 101
Final Examination
First Semester 2011/2012, Term 111
Wednesday, 11th January 2012
Dr. Bahha Eldin Abdalla

Time Allowed: 120 minutes

Maximum points: 60 points

Name: _____ _____ _____
(First) (Middle) (Last)

ID Number: _____ **Section:**_____

Important Instructions*:*

1. You may use CASIO scientific calculator that does not have programming or graphing capabilities.
2. You may NOT borrow a calculator from anyone.
3. You do NOT get special consideration if you forget your calculator.
4. Don't use notes or any notebook.
5. There should be NO talking during the examination.
6. Your exam will be taken immediately without any warning if your mobile is seen or heard.
7. You must show all your work beside the problem. Be organized.
8. You may use the back of the pages for extra space, but be sure to indicate that on the page with the problem.
9. This examination has **13** problems, some with several parts. Make sure that your paper has all these problems

Problem	Max points	Student's Points
1,2	12	
3,4,5	14	
6,7,8,9	17	
10,11,12,13	17	
Total	**60**	

Q1 (8 points) Given the set of data 4, 8, 9, 8, 6, 5, 7, 5, 8, find each of the following sample statistics:

1. ***1.*** Mean

2. ***2.*** Median

3. ***3.*** Mode

4. ***4.*** Midrange

5. ***5.*** First quartile

6. ***6.*** P_{40}

7. ***7.*** Variance

8. ***8.*** Range

Q2 (4 points) In a distribution of 160 values with a mean of 72, at least 120 fall within the interval 67 – 77. Approximately what percentage of values should fall in the interval 62 – 82? Use Chebyshev's theorem.

Q3 (4 points) Alex, Bill, and Chen each, in turn, toss a balanced coin. The first one to throw a head wins. What are their respective chances of winning if each tosses only one time? Draw a tree diagram and determine the sample space.

Q4 (6 points) Suppose that when a job candidate interviews for a job at RJB Enterprises, the probability that he or she will want the job (A) after the interview is 0.68. Also, the probability that RJB will want the candidate (B) is 0.36. The probability $P(A|B)$ is 0.88.

1. Find $P(A \text{ and } B)$

2. Find $P(B \text{ or } A)$

3. Are events A and B independent? Explain.

4. Are events A and B mutually exclusive? Explain

Q5 (4 points)

1. How many ways can 4 baseball players and 3 basketball players be selected from 12 baseball players and 8 basketball players?

2. A box contains 24 transistors, 4 of which are defective. If 5 are sold at random, find the probability that exactly 2 are defective.

Q6 (4 points) A doctor knows from experience that 10% of the patients to whom she gives a certain drug will have undesirable side effects. Find the probability that among the 12 patients to whom she gives the drug at least two will have undesirable side effects.

Q7 (3 points) A discrete random variable has a standard deviation equal to 10 and a mean equal to 50. Find $\sum x^2 P(x)$.

Q8 (5 points) The grades on an examination whose mean is 525 and whose standard deviation is 80 are normally distributed. Find the interquartile range for the grades on this examination.

Q9 (5 points) It is believed that 58% of married couples with children agree on methods of disciplining their children. Assuming this to be the case, what is the probability that in a random survey of 200 married couples, we would find more than 100 couples who agree?

Q10 (3 points) Among the teams in a bowling league, the probability that the uniforms are all 1 color is 0.45, that 2 colors are used is 0.35, and that 3 or more colors are used is 0.20. If a sample of 12 uniforms is selected, find the probability that 5 contain only 1 color, 4 contain 2 colors, and 3 contain 3 or more colors.

Q11 (4 points) The average number of gallons of lemonade consumed by the football team during a game is 20, with a standard deviation of 3 gallons. Assume the variable is normally distributed. When a game is played, find the probability of using between 20 and 25 gallons.

Q12 (5 points)

1. Find the area under the standard normal distribution to the left of $z = -2.12$

2. Find the z value to the left of the mean so that 98.87% of the area under the distribution curve lies to the right of it.

Q13 (5 points) The average age of a vehicle registered in the United states is 8 years, or 96 months. Assume the standard deviation is 16 months. If a random sample of 36 vehicles is selected, find the probability that the mean of their age is between 90 and 100 months.

Good-Luck