



Prince Sultan University
STAT 101
Second Examination
Second Semester 2010/2011, Term 102
Wednesday, 18th May 2011

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Time Allowed: 90 minutes

Maximum points: 40 points

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

ID Number: _____ **Serial 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 **8** problems, some with several parts. Make sure that your paper has all these problems

<i>Problem</i>	<i>Max points</i>	<i>Student's Points</i>
1	4	
2	6	
3	4	
4	6	
5	4	
6	4	
7	4	
8	8	
Total	40	

Q1 (4 points total)

Let A and B be two independent events such that $P(A|B) = 0.2$ and $P(A \cap B) = 0.1$.

a. (2 Points) Calculate $P(A \cup B)$.

b. (2 Points) Calculate $P(B|A)$.

Q2 (6 points)

Circle the right answer in each of the following:

a. In how many ways can 4 boys and 3 girls be seated in a row of 7 chairs such that no two of the same sex are set beside each other.

- a.** 5040 **b.** 144 **c.** 12 **d.** None of the choices

b. How many different four-digit numbers can be formed from the digits 1, 2, 3,..., 9 such that the first digit is odd, also you can't repeat the digit.

- a.** 336 **b.** 120 **c.** 1680 **d.** None of the choices

c. The value of the permutation ${}_9P_2$ is equal

- a.** 362880 **b.** 36 **c.** 72 **d.** None of the choices

Q3 (4 points total)

It is reported that 20% of American high school students drop out of school before graduation. Choose 10 students entering high school at random.

a. (2 Points) Find the probability that two drop out of school before graduation.

b. (2 Points) Find the expected number of students who drop out of school before graduation.

Q4 (6 points total)

Two hundred single-sport athletes were cross-classified according to gender as follows:

<i>Single-Sport Athletes</i>			
<i>Gender</i>	Swimmer	Runner	Cyclist
Male	25	60	25
Female	20	50	20

An athlete is selected at random.

a. (2 Points) What is the probability that the athlete is a runner?

b. (2 Points) What is the probability that the athlete is a swimmer and male.

c. (2 Points) Given that a randomly selected athlete is a female, what is the probability that she is a runner?

Q5 (4 points) A book shelf has 5 Mathematics books and 4 Statistics books. Four books are chosen randomly one at a time and without replacement. Find the probability of choosing 2 Mathematics books and 2 Statistics books.

Q6 (4 points) The probability that a person will make 0, 1, 2 or 3 errors on his or her income tax return is 0.5, 0.3, 0.15, and 0.05, respectively. If 8 claims are selected, find the probability that 4 will contain 0 errors, 2 will contain 1 error, 1 will contain 2 errors and 1 will contain 3 errors.

Q7 (4 points) If the random variable X has a Poisson distribution with mean $\lambda = 2$. Calculate $P(X \geq 1)$.

Q8 (8 points total)

Let X be a random variable with the following probability distribution:

x	-2	-1	0	1	2
P(x)	0.15	0.35	0.2	0.1	0.2

- a. (2 Points)** Calculate $P(X > -1)$.
- b. (2 Points)** Calculate μ (the mean of the random variable X).
- c. (4 Points)** Calculate σ^2 (the variance of the random variable X).

Good Luck