

MATH 244: Introduction to Probability **Examination #1** (Fall 2006)

October 12, 2006 NJIT

Name:	Student#:	Section #
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Instructor: S. Dhar

➔ **Must show all work to get full credit.**

I pledge my honor that I have abided by the Honor System. _____
(Signature)

Score	
#1	
# 2	
#3	
#4	
#5	
#6	
Total	

1. Six people, designated as A, B, C, D, E, F, are arranged in a linear order. Assuming that each possible order is equally likely what is the probability that there is exactly two people between A and B? (11 pts)

2. A retail establishment accepts either the American Express or the VISA credit card. A total of 25 % of its costumers carry an American Express card, 60% carry a VISA card, and 10% carry both. What percentage of its customers carry a credit card that the establishment will accept? (11 pts)

3. A committee of 5 is to be selected from a group of 5 men and 10 women. If the selection is made randomly, what the probability that the committee consists of 2 men and 3 women? (10 pts)

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4. How many ways can 10 people be seated in a row

(a) there are 5 men and 5 women and no two men or two women can sit next to each other;

(8) pts

(b) there are five married couples and each couple must sit next to each other.

(8) pts

5. A person has 10 friends, of whom 6 will be invited to a party. How many choices are there if 2 of the friends will only attend together?

(10 pts)

6. (a) Expand $(x_1 + 2x_2 + x_3)^4$.

(12 pts)

(b) How many terms are there in the expansion of $(x_1 + x_2 + x_3 + \dots + x_{10})^7$?

(6pts)

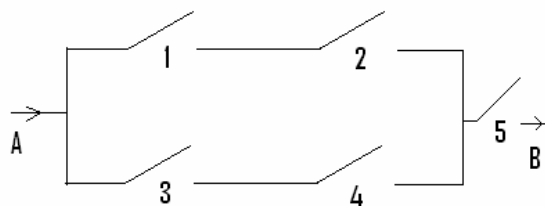
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7. Suppose that 5 percent of men and 0.25 percent of women are colorblind. A colorblind person is chosen at random. What is the probability of this person being male assume that there are an equal number of males and females?

(12 pts)

8. The probability of the closing of the i th relay in the circuits shown in the figure below is given by p_i , $i = 1, 2, 3, 4, 5$. If all relays function independently, what is the probability that a current flows between A and B?

(12 pts)



END