

**Quiz 4 (Group) for Statistics 213**  
**Probability and Decision Theory - Spring 1999**  
**Material Covered: Chapter 6 of Workbook and text**  
**For: 19th March**

This is a 15 minute quiz, worth 6% and marked out of 6 points. The total possible points awarded for each question is given in square brackets at the beginning of each question. Anything that can fit on one side of an  $8\frac{1}{2}$  by 11 inch piece of paper may be used as a reference during this quiz. A calculator and appropriate statistical tables may also be used. No other aids are permitted.

Name 1 (please print): \_\_\_\_\_  
last first

Name 2 (please print): \_\_\_\_\_  
last first

Name 3 (please print): \_\_\_\_\_  
last first

Name 4 (please print): \_\_\_\_\_  
last first

1. Let  $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ ,  $A = \{1, 3, 5, 7, 9\}$ ,  $B = \{2, 4, 5\}$  and  $C = \{1, 3, 5, 7, 10\}$
- (a) [1]  $A \cap B =$  (circle one) **{1, 2, 4, 5, 7, 9}** / {1, 2, 3, 4, 5, 5, 7, 9} / {5} / {2, 4, 5} / {1, 3, 5}
- (b) [1]  $n(A \cap B^c \cap C) =$  (circle one) **0** / 1 / 2 / 3 / 4

2. Consider the following questions on the multiplication rule, permutations and combinations.
- (a) [1] How many 7-digit telephone numbers are possible  
 if the first three numbers must be 219? \_\_\_\_\_
- (b) [1] **order matters** / **order does not matter** and **sampling with replacement** / **sampling without replacement** when trying to determine the number of ways 5 people can form a line
- (c) [1] Find the number of *permutations* that can be formed from  
 all the letters in the word *chicago* \_\_\_\_\_
- (d) [1] How many *combinations* of 6 cards can be dealt from  
 a standard deck of 52 cards? \_\_\_\_\_

1. Let  $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ ,  $A = \{1, 3, 5, 7, 9\}$ ,  $B = \{2, 4, 5\}$  and  $C = \{1, 3, 5, 7, 10\}$

(a) [1]  $A \cap B = \{5\}$

(b) [1]  $n(A \cap B^c \cap C) = 3$  (1, 3 and 7; remember,  $B^c = \{1, 3, 6, 7, 8, 9, 10\}$ )

2. Consider the following questions on permutations and combinations.

(a) [1] How many 7-digit telephone numbers are possible if the first three numbers must be 219?  
 $10^4$

(b) [1] **order matters** and **sampling without replacement** when trying to determine the number of ways 5 people can form a line

(c) [1] Find the number of *permutations* that can be formed from all the letters in the word *chicago*  
 $\frac{7!}{2!}$  (divide out order of two a's)

(d) [1] How many *combinations* of 6 cards can be dealt from a standard deck of 52 cards?  $\frac{52!}{6!(52-6)!}$