## King Fahd University of Petroleum and Minerals

College of Computer Science and Engineering Information and Computer Science Department

ICS 253-01: Discrete Structures I Summer 2012-2013 Quiz#6, Wednesday July 24, 2013.

Name:

ID#:

1. (5 points) What is the probability that a five-card poker hand does not contain the queen of hearts?

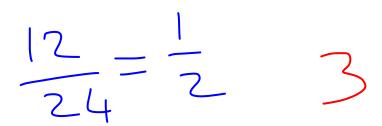
2 p(poker hand with Queen of Hearts) = 
$$1 {51 \choose 4} / {52 \choose 5}$$
.  
3 : The probability of not containing it) =  $1 - \frac{{51 \choose 4}}{{52 \choose 5}}$ .

2. (5 points) In a super lottery, players win a fortune if they choose the eight numbers selected by a computer from the positive integers not exceeding 100. What is the probability that a player wins this super lottery?

$$\frac{1}{(100)}$$

3. (5 points) What is the probability of 1 preceding a 4 when we randomly select a permutation of {1, 2, 3, 4}?

1423,1432,1234,1243,1324,1342,2134,2143,2314,2341,2413,2431
3124,3142,3214,3241,3412,3421,4123,4132,4213,4231,4312,4321



4. (5 points) Show that if *E* and *F* are events, then  $p(E \cap F) \ge p(E) + p(F) - 1$ .

Since 
$$1 \ge P(EUF) = P(E) + P(F) - P(ENF)$$
  

$$\therefore P(ENF) \ge P(E) + P(F) - 1.$$