Prince Sultan University
Stat 101 (Second test) session 072
Wednesday April 23. 2008
Dr. Bader Abid
Time allowed : 80 minutes

Name : …………………………………

 Student ID # ……………………

. This exam has 9 questions, some with parts. Total 5 pages Including cover

. Max score 75.

. You Must show all your work to get full credit.

. You may use back of pages for extra space, please indicate question number.

.Non programmable scientific calculators are allowed.

.You may not borrow a calculator from any one during exam.

. No notes, notebooks or extra pages are allowed on your desk.

. There should be NO talking or looking at other's papers during exam.

. Turn your mobile phone off. No use of mobile phone during exam allowed.

Q1(12 pts) An experiment can result in one or both of events A and B with the probabilities shown in this probability table.

	A	A^c
B	0.34	0.46
B^c	0.15	0.05

Find following probabilities (a) P(A),   (b) P(B) ,   (c) P(A ∩ B)
(d) P(A U B) ,   (e) P (A|B),   (f) P(B|A).

Q2 (3pts)(a) Five cards are selected from a 52 card deck for a poker hand. How many simple events are in the sample space?

(b)(3pts) You own four pair of jeans, 12 T-shirts and 4 pair of sneakers, how many outfits,(jean, T-shirt and sneakers) can you create?

Q3(10) A jar contains four coins, a nickel, a dime, a quarter and a half dollar.
(Nickel = 5 cents, Dime = 10 cents, Quarter = 25 cents, Half dollar = 50 cents)
Three coins are randomly selected from the jar.
  (a) List the simple events in S
  (b) What is the probability that selection will contain the half dollar?
  (c) What is the probability that total amount drawn will equal 60 cents or more.

Q4 (6pts)A sample space contains 10 simple events $E_1, E_2, \ldots\ldots E_{10}$.
If $P(E_1) = 3P(E_2) = 0.45$ and the remaining simple events have same probability,
Find the probabilities of these remaining simple events. (Show your complete work)

Q5 (6pts) Toss two coins and record the outcome, Define these events. A: Head on first
coin, B: Tail on second coin. Are events A and B independent? Show your work
completely.

Q6 (8pts)Given sample space $S = \{ E_1, E_2, E_3, E_4, E_5, E_6 \}$, Event A=$\{ E_1, E_3 \}$
Event B= $\{E_3, E_4, E_5 \}$. Draw two Venn diagrams for (a) A $\cap$ B and (b) B^c.
Shade the desired area, indicating positions of all elements.

Q7(8pts) Let X be a discrete random variable with a probability distribution given as

X	-2	-1	0	1
P(X)	2/9	1/9	3/9	-

(a) Find P(1), (b) Find mean=E(X), (c) Find standard deviation.

Q8(10pts) Consider a binomial random variable with n=5 and p=0.6. find these values

(a) P(X=3) (b) P(X $\leq$ 1) (c) P(X $\succ$ 3) (d) Standard deviation

Q9 (9 pts) Circle correct answer

(a). An experiment consists of tossing 3 unbiased coins simultaneously. The number of simple events in this experiment is: (a). 3   (b). 6   (c). 8   (d). 9

(b) A useful graphical method of displaying the sample space for an experiment is:
(a) a tree diagram (b) a box plot (c) a histogram (d) a scatter plot

(c) An event is
    a. an experiment that is not controlled by the decision maker
    b. the list of all possible simple events of an experiment
    c. a collection of one or more simple events
    d. a collection of two or more simple events

(d) When Cynthia enters a grocery store, there are three simple events: buy nothing, buy a small amount, or buy a large amount. If Cynthia buys a small amount, she cannot also buy a large amount or buy nothing. Thus the three events are:
    (a).mutually exclusive (b) not mutually exclusive (c). dependent events (d). None

(e) . Which one of the following is always true for two events, A and B?
    a. If A and B are independent, they are also mutually exclusive.
    b. If A and B are dependent, they are also mutually exclusive.
    c. If $P(A / B) = P(A B)$, A and B are independent. $\cap$
    d. If A and B are mutually exclusive, then $A \cap B$ can never occur on the same trial of an experiment.

(f) Two events A and B are said to be dependent if and only if
    a. $P(A) = P(B)$
    b. $P(A)$ increases along with $P(B)$
    c. $P(A)$ increases as $P(B)$ decreases
    d. event A is affected or changed by the occurrence of event B