HAIGAZIAN UNIVERSITY
Mathematics Department

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Mat 233 (probability & Statistics) Quiz 1 **Nov 16/2006** **Time : 75 mins**

Name:----------

Part 1

Do this part on the answer booklet . Report the probability answers as reduced fractions or decimals to at least 4 significant digits.

(25%) 1. A box contains 6 white balls and 4 black ones .Three balls are to be selected at random. Calculate the probabilities of the following events.

a) Of getting 3 white balls.
b) Of getting 3 black balls.
c) of getting exactly 2 white balls.
d) Of getting exactly 2 black balls.
e) Of getting at least one white and at least one black balls.

(25%)2. Three fair dice are to be thrown. Calculate the probabilities of the following events.
a) Of getting all 3 different numbers.
b) Of getting all even numbers.
c)Of getting a sum of 10 given three different numbers.
d) Of getting three different numbers given a sum of 10.
e) Are the events: "three different numbers" and " sum of 10" independent?

(20%)3. a) A coin with p(T) = 0.35 is to be tossed 4 times . Determine the probability of exactly one tail.
b) Prove pr disprove: If A and B are independent , then so are A and the complement of B.

Part 2

Do this part on the question sheet.
Please circle the correct answer or supply your answer whenever appropriate.

1. A coin with p(T) = 0.45 is to be tossed twice. Find the probability of getting a tail and a head.

a) 0.35 b) 0.1225 c) 0.455 d) 0.495 e) none

$2(0.45)(1-0.45)$

2. Five distinct objects are to be randomly distributed into 5 distinct boxes. What is the probability that no box remains empty?

a) 24/625 b) 3/32 c) 5/32 d)29/125 e) none

$\frac{5!}{5^5}$

3. A and B are independent events with P(A) = P(B) = 0.5. Find P (AUB).

a) 0.95 b) 0.75 c) 0. 86 d) 0.84 e) none

$P(A) + P(B) - P(A)P(B) = 1 - 0.25 = 0.75$

4. A box contains: 3 fair coins, 3 coins with p(T) =1/4, and one with p(T) = 1/5. A coin will be selected at random and tossed. What is the probability of getting a tail?

(a) 7/20 b) 11/30 c) 13/30 d)31/140 e) none $\left(\frac{3}{7}\right)\left(\frac{1}{2}\right)+\left(\frac{3}{7}\right)\left(\frac{1}{4}\right)+\left(\frac{1}{7}\right)\left(\frac{1}{5}\right)$

5. In asset of 5 keys only 3 open a given door. If one selects 2 keys at random and tries them to open the door, what is the probability that the door opens?

a) 4/5 b) 1/2 (c) 9/10 d)7/10 e) none $\frac{\binom{3}{1}\binom{2}{1}+\binom{3}{2}}{\binom{5}{2}}$

6. The sample space for a given experiment is partitioned into3events : A , B , and C.

The experiment will be repeated until either A occurs or B occurs. Let P(A) = a, and P(B) = b. Write in terms of "a" and "b" The probability the A occurs before B

Answer:----------

GOOD LUCK $$$$