King Saud University 1st semester 1436/1437 H

Computer Engineering Department CEN343: Introduction to Random Processes

College of Computer and Information Sciences

**HW # 1**

Name: ID#

**Question 1**

A. Let us consider the experiment of tossing a die. Find the probabilities of the following events:

1. Event ={odd number shows up}.
2. Event ={number larger than 3 shows up}

B. In three boxes there are capacitors as shown in Table below. An experiment consist first of randomly selecting a box and then selecting a capacitor from the chosen box.

1. What is the probability of selecting 0.01 µF capacitor given that box 2 is selected.
2. What is the probability of selecting 0.01 µF capacitor.
3. If a 0.01 µF is selected what is the probability that it came from box 3.

|  |  |  |  |
| --- | --- | --- | --- |
| **Capacitor (µF)** | **Box1** | **Box2** | **Box3** |
| 0.01 | 20 | 95 | 25 |
| 0.1 | 55 | 35 | 75 |
| 1 | 70 | 80 | 145 |

**Question 2**

1. Find the mean and variance of a uniform density function defined in the interval the probability density function is given as follows:
2. Let us consider a random variable with the following probability density:

Determine the and using the moment generating function.

**Question 3**

Given the function

1. Find the constant such that is a valid joint density
2. Determine the marginal density functions and
3. Determine the class conditional density
4. Are X and Y statically independent.