ASSIGNMENT ONE

Instructions:

a) You can use any source of information.

b) You can consult anybody.

c) However, submit your work Individually.

Due Date: Wednesday, 30/09/2020

Questions

a) Define a random variable

b) The following are distributions of discrete random variables:

   1. Bernoulli distribution
   2. Binomial distribution
   3. Poisson distribution

   Define each of them and **describe** 2 main features of each

c) Write out the probability function of each distribution above

d) At the UNZA, School of Agricultural Sciences research field station, the beef herd produces calves at the rate of 2 calves every 3 months.

   1. What is the probability that 5 calves will be birthed in one year?
   2. What is the probability that at least 5 calves will be birthed in one year?
   3. What is the probability that less than 5 calves will be birthed in one year?
   4. What is the expected number of calves birthed in one year?

e) At the same UNZA, School of Agricultural Sciences research field station, you are employed as a statistician. You find that one out of every ten births from the beef herd has a genetic anomaly.

   1. If you randomly select 25 calves, what would be the expected number of calves with genetic anomalies?
   2. Out of 5 randomly selected calves, what is the probability of observing at most one genetic anomaly?
   3. Out of the 5 randomly selected calves, what is the probability of observing 3 or more calves with genetic anomalies?
   4. Out of the 5 random calves, what is the probability of observing less than 3 calves with genetic anomalies?