1. Explain statistical efficiency in plain wording to a person who does not know much about statistics.(10%)

2. The following sample contains 25 numbers of dots in the screen of CRT. What distribution do the data come from most likely?(5%) Why(5%)? How to check your answer?(10%)

    data: 1, 2,1, 2, 3, 0, 3, 2, 6 ,4, 0 ,7 ,0 ,1 ,2 ,1 ,3 ,3 ,9 ,8 ,7. 2 ,4, 7 ,5 .

3. One manufacturing process has a failure rate less than 0.4.　To estimate its failure rate, how many sample do we need to guarantee our estimator having variance less than 0.01.(20%)

4. There are two sets of bulb-life samples from two manufacturing processes. We plot their sample distributions in the following picture.　Which one is better(5%) and give your reason(15%).

    (a)
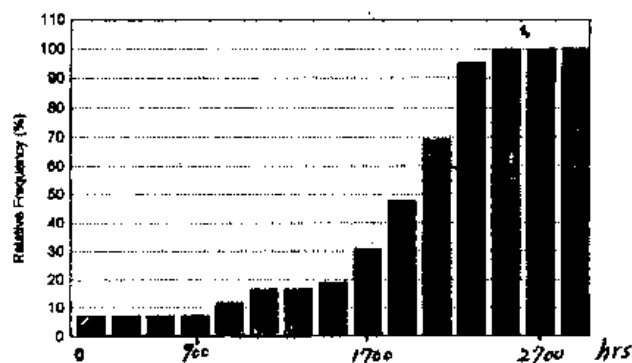
    (b)
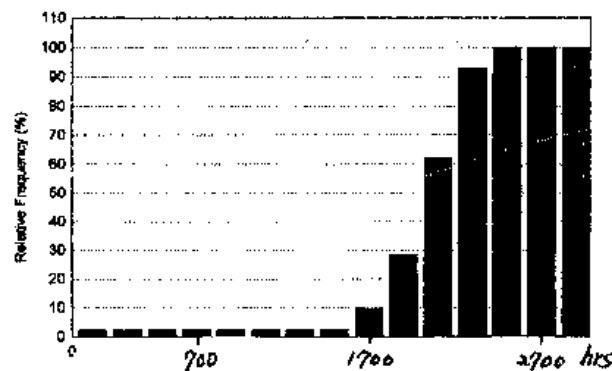
5. In the normal distribution what is the relation between (1) mean and median (5%) (2) 92percentile and 8 percentile (5%)(3) standard deviation and interquantile range(10%).

6. What do you do first when you have a set of data for a random variable?(10%)