

Module 4 Midterm Review Questions.

Basic Probability

What are meant by independent events and mutually exclusive events?

What is meant by conditional probability?

What is first pass yield and how is it calculated?

What is meant by rolled throughput yield?

Be able to work problems similar to those in the lecture and on the probability worksheet.

Hypergeometric

What is meant by sampling without replacement and where in quality is it most applicable.

What is meant by “combinations” and how do you calculate combinations?

What are the assumptions of the hypergeometric distribution?

Be able to identify situations where hypergeometric is required to get the exact probabilities.

Set up and solve hypergeometric problems.

Binomial distribution

What are the assumptions of the binomial distribution?

Be able to identify situations where binomial is used or may be used to approximate hypergeometric.

Set up and solve binomial problems,

Poisson distribution

Describe types of situations where the Poisson distribution should be used.

Differentiate between “defect” and “defective”

Solve Poisson problems where no sample size is given and as appropriate to approximate binomial problems.

Normal distribution

Given the mean and standard deviation (or variance) of a process

 Given x value, determine probability of observation above or below

 Given a probability area under curve, determine associated x values

Explain what is meant by specification limits and equal bilateral tolerances.

Calculate % defective given process mean, standard deviation (or variance) and specification limits

Define scrap, rework, repair, regrade and concession and given a scenario be able to identify which is occurring.

Lognormal

Describe uses of lognormal

Calculate probabilities given lognormal variable y and parameters μ and σ .

Determine expected value of Y

Exponential

Describe uses of the exponential distribution

Define reliability, MTTF and MTBF

Calculate probabilities given process mean or λ , MTBF, or MTTF.

Apply the “Lack of Memory” property in an exponential problem.

Probability Plotting

Describe the axes of a probability plot.

Interpret a probability plot to determine

 If a type of distribution is plausible.

 If plausible, relationship between % distribution and observation values.