

### Semester Three (Statistics) Mathematics T

1. Why an interval estimate is more informative than a point estimate?
  - Interval estimate gives the probability that the real value of the population parameter will lie within the interval stated.
  
2. Significance level
  - The standard which is used to reject the null hypothesis in a hypothesis test. In other words, it is the probability of rejecting  $H_0$  when  $H_0$  is true.
  
3. Critical Region
  - The set of values of the test statistic for which the null hypothesis is rejected.
  
4. Suggest two ways to reduce the width of the confidence interval that you obtain.
  - Increase the sample size
  - Decrease the percentage of confidence interval
  
5. Interpret and comment on the confidence interval
  - The population mean lies between XX and YY with ZZ% confidence.
  
6. Describe briefly the standard normal random variable
  - The standard normal random variable is a continuous random variable with a mean of 0 and a variance of 1.  $Z \sim N(0,1)$
  
7. Give two reasons why Poisson distribution cannot be an exact model for Y.
  - The number of XX is finite and limited
  - The mean number of XX is not known.
  
8. Hypothesis Testing
  - Method of using sample data to test a statistical hypothesis about population parameters.
  
9. Null Hypothesis
  - A statement about population parameter that assume to be true

10. Critical value

- Compare to the test statistic to determine whether to reject null hypothesis

11. Explain the meaning of "at the 5% significance level"

- The probability of rejecting hypothesis that \_\_\_\_\_ when it is true at \_\_\_\_\_.

12. Explain the meaning of type one error.

- Concluding that \_\_\_\_\_ when it hasn't.

13. Random Sample:

- Each member of the population has the equal chance of being selected into sample

14. What is the difference between parameter and statistics:

- A parameter is any quantitative measure which characterize a population.
- A statistics is any quantitative measure which characterize a sample

15. Sampling

- A process of choosing sample from a population

16. Why central limit theorem is not needed

- X has a normal distribution

17. Why median is the best measure of central tendency

- Because the data is positively/negatively skewed

18. Why binomial distribution is the suitable model for Y.

- There are two possible outcomes. Success and failure
- The probability of success,  $p$ , is constant
- The trials are independent