Final Exam

1. The expected value of $\bar{x}$ equals the mean of the population from which the sample is drawn
   a. only if the sample size is 30 or greater
   b. only if the sample size is 50 or greater
   c. only if the sample size is 100 or greater
   d. for any sample size

2. The basis for using a normal probability distribution to approximate the sampling distribution of $\bar{x}$ and $\bar{p}$ is
   a. Chebyshev's theorem
   b. the empirical rule
   c. the central limit theorem
   d. Bayes' theorem

3. The standard deviation of $\bar{p}$ is referred to as the
   a. standard proportion
   b. sample proportion
   c. average proportion
   d. standard error of the proportion

4. The standard deviation of $\bar{x}$ is referred to as the
   a. standard x
   b. standard error of the mean
   c. sample standard mean
   d. sample mean deviation

5. The value of the _____ is used to estimate the value of the population parameter.
   a. population statistic
   b. sample parameter
   c. population estimate
   d. sample statistic

6. The use of the normal probability distribution as an approximation of the sampling distribution of $\bar{p}$ is based on the condition that both np and $n(1 - p)$ equal or exceed
   a. .05
   b. 5
   c. 10
   d. 30

7. The sample size that guarantees all estimates of proportions will meet the margin of error requirements is computed using a planning value of p equal to
   a. .01
   b. .50
   c. .51
   d. .99

8. We can reduce the margin of error in an interval estimate of p by doing any of the following except
   a. increasing the sample size
   b. increasing the planning value p^* to .5
   c. increasing the level of significance

    d. reducing the confidence coefficient

9. In determining an interval estimate of a population mean when σ is unknown, we use a t distribution with
    a. $\sqrt{n-1}$ degrees of freedom
    b. $\sqrt{n}$ degrees of freedom
    c. $n-1$ degrees of freedom
    d. n degrees of freedom

10. The expression used to compute an interval estimate of μ may depend on any of the following factors except
    a. the sample size
    b. whether the population standard deviation is known
    c. whether the population has an approximately normal distribution
    d. whether there is sampling error

11. For a two-tailed hypothesis test about μ, we can use any of the following approaches except
    a. compare the confidence interval estimate of μ to the hypothesized value of μ
    b. compare the p-value to the value of α
    c. compare the value of the test statistic to the critical value
    d. compare the level of significance to the confidence coefficient

12. An example of statistical inference is
    a. a population mean
    b. descriptive statistics
    c. calculating the size of a sample
    d. hypothesis testing

13. In hypothesis testing, the hypothesis tentatively assumed to be true is
    a. the alternative hypothesis
    b. the null hypothesis
    c. either the null or the alternative
    d. None of the other answers are correct.

14. In hypothesis testing, the alternative hypothesis is
    a. the hypothesis tentatively assumed true in the hypothesis-testing procedure
    b. the hypothesis concluded to be true if the null hypothesis is rejected
    c. the maximum probability of a Type I error
    d. All of the answers are correct.

15. Your investment executive claims that the average yearly rate of return on the stocks she recommends is at least 10.0%. You plan on taking a sample to test her claim. The correct set of hypotheses is
    a. H_0: $\mu < 10.0\%$ H_a: $\mu \geq 10.0\%$
    b. H_0: $\mu \leq 10.0\%$ H_a: $\mu > 10.0\%$
    c. H_0: $\mu > 10.0\%$ H_a: $\mu \leq 10.0\%$
    d. H_0: $\mu \geq 10.0\%$ H_a: $\mu < 10.0\%$

16. When each data value in one sample is matched with a corresponding data value in another sample, the samples are known as
    a. corresponding samples
    b. matched samples
    c. independent samples
    d. None of these alternatives is correct.

17. Independent simple random samples are taken to test the difference between the means of two populations whose variances are not known. The sample sizes are $n_1 = 32$ and $n_2 = 40$. The correct distribution to use is the
    a. binomial distribution
    b. t distribution with 72 degrees of freedom
    c. t distribution with 71 degrees of freedom
    d. t distribution with 70 degrees of freedom

18. Independent simple random samples are taken to test the difference between the means of two populations whose standard deviations are not known. The sample sizes are $n_1 = 25$ and $n_2 = 35$. The correct distribution to use is the
    a. Poisson distribution
    b. t distribution with 60 degrees of freedom
    c. t distribution with 59 degrees of freedom
    d. t distribution with 58 degrees of freedom

19. If two independent large samples are taken from two populations, the sampling distribution of the difference between the two sample means
    a. can be approximated by a Poisson distribution
    b. will have a variance of one
    c. can be approximated by a normal distribution
    d. will have a mean of one

20. The standard error of $\bar{x}_1 - \bar{x}_2$ is the
    a. variance of $\bar{x}_1 - \bar{x}_2$
    b. variance of the sampling distribution of $\bar{x}_1 - \bar{x}_2$
    c. standard deviation of the sampling distribution of $\bar{x}_1 - \bar{x}_2$
    d. difference between the two means

21. An important application of the chi-square distribution is
    a. making inferences about a single population variance
    b. testing for goodness of fit
    c. testing for the independence of two variables
    d. All of these alternatives are correct.

22. The number of degrees of freedom for the appropriate chi-square distribution in a test of independence is
    a. $n - 1$
    b. $k - 1$
    c. number of rows minus 1 times number of columns minus 1
    d. a chi-square distribution is not used

23. In order not to violate the requirements necessary to use the chi-square distribution, each expected frequency in a goodness of fit test must be
    a. at least 5
    b. at least 10
    c. no more than 5
    d. less than 2

24. A statistical test conducted to determine whether to reject or not reject a hypothesized probability distribution for a population is known as a
    a. contingency test
    b. probability test

c. goodness of fit test
d. None of these alternatives is correct.

25. The degrees of freedom for a contingency table with 12 rows and 12 columns is
    a. 144
    b. 121
    c. 12
    d. 120

26. A measure of the strength of the relationship between two variables is the
    a. coefficient of determination
    b. slope b_1 of the estimated regression line
    c. standard error of the estimate
    d. correlation coefficient

27. The interval estimate of the mean value of *y* for a given value of *x* is the
    a. confidence interval
    b. prediction interval
    c. residual interval
    d. correlation interval

28. Regression analysis is a statistical procedure for developing a mathematical equation that describes how
    a. one independent and one or more dependent variables are related
    b. several independent and several dependent variables are related
    c. one dependent and one or more independent variables are related
    d. None of these answers is correct.

29. In regression analysis, the variable that is being predicted is the
    a. dependent variable
    b. independent variable
    c. intervening variable
    d. None of these answers is correct.

30. In a regression analysis, the variable that is being predicted
    a. must have the same units as the variable doing the predicting
    b. is the independent variable
    c. is the dependent variable
    d. usually is denoted by x