Choose the correct answer from the given alternatives

1. What is any subset of the sample space called?
A. an event B. an experiment C. a mutually exclusive event D. Independent events
2. Which of the following are the similarities between the standard normal distribution and the t distribution?
A. Both distributions are symmetric (bell–shaped) about the mean.
B. Neither distribution meets the horizontal axis.
C. Total area under each of these curves is 1.0.
D. The mean of both of these distributions is zero.
E. All of these
3. A definite plan for obtaining a sample from a sample frame can be termed as:
A. Sampling design B. Sampling unit C. Sampling frame D. Sampling error

4. Branch of statistics which study the unknown aspects of a population distribution is
A. Estimation B. Hypothesis testing C. Inferential statistics D. Descriptive statistics
5. The mistakes or biases which are considered as causes of non-sampling errors must includes
A. Incorrect enumeration of population C. Incomplete questionnaire
B. Non-random sample selection D. All of these E. None of these

6. Which of the following represents the disadvantages of using the sample range to measure dispersion?

A. It produces spreads that are too large

B. The largest or smallest observation (or both) may be an outlier

C The sample range is not measured in the same units as the data

D. The sample range is measured in the same unit as the data

7. In systematic sampling, the population is 200 and the selected sample size is 50 then the sampling interval is?

A. 250 B. 0.25 C. 4 D. 40 E. None of these
8. If a perfectly round and balanced coin is tossed four times, the probability of getting exactly three heads equals:

A. $\frac{1}{8}$ B. $\frac{1}{4}$ C. $\frac{1}{2}$ D. $\frac{1}{32}$ E. None of these

9. Which one of the following is not true about the characteristics of normal probability distribution?
A. It is symmetrical about its mean

B. The normal curve is bell-shaped and has a single peak at the exact center of the distribution.

C. The mean, median and mode of the distribution are not equal and located at the peak

D. The normal curve falls off smoothly in either direction from the central value asymptotically

10. For a population consisting of four (4) members, how many samples of size two (2) can be formed with replacement and without replacement respectively?

A. 16 & 2 B. 16 & 12 C. 16 & 6 D. 8 & 6 E. None of these

11. among the types of sampling, which one of the following different from the others
A. Stratified sampling B. Cluster sampling C. Convenience sampling D. Systematic sampling

12. The number of products manufactured in the factory in a day are 3500 and the probability that some pieces are defected is 0.55 then the standard deviation of binomial probability distribution is:

A. 43.87 B. 29.43 C. 39.69 D. 1925 E. None of these

13. Which one of the following probability distribution uses continuous data for their estimation?

A. Poisson distribution B. Normal distribution C. Binomial distribution D. None of these

14. Which one of the following did not considered as a need for sampling?

A. Greater speed B. Greater scope C. Reduction of cost D. Narrow information can be obtained E. None

15. What is a numerical descriptive measure calculated from the sample called?

A. a parameter B. a statistic C. a population D. a sampling distribution

16. A type II error is committed if we:

A. Reject a true null hypothesis D. Reject a true alternate hypothesis

B. Accept a true alternate hypothesis E. None of these is correct

C. Accept both the null and alternate hypotheses at the same time

17. If ti's, i = 1, 2, …, n are possible estimators of a parameter θ, and if t_i is also an estimator of θ whose variance is less than the variances of all other estimators of θ, then t_i is said to be

A. Sufficient estimator B. Consistent estimator C. Unbiased estimator D. Efficient estimator E. None

18. In hypothesis testing, the hypothesis tentatively assumed to be true is

A. the alternative hypothesis C. either the null or the alternative

B. the null hypothesis D. None of these alternatives is correct

19. Which of the following refers to numbers that indicate the spread or scatter of observations in the data set?

A. measures of center B. measures of location C. measures of variability D. measures of shape

20. An experiment involves selecting a random sample of 256 middle managers for study. One item of interest is annual income. The sample mean is computed to be $45,420, and the sample standard deviation is $2, 050. What is the 95 percent confidence interval?

A. ($45, 169; $45, 671) B. ($46, 168; $ 47, 668)

C. ($45, 210; $45,630) D. ($46, 000; $47, 000) E. None of these

21. The measure of location which is the most likely to be influenced by extreme values in the data set is the

A. range B. median C. mode D.. mean

22. In order to test the following hypotheses at an α level of significance

$H0: \mu \leq 100$

$Ha: \mu > 100$

The null hypothesis will be rejected if the test statistic Z ($Z_{cal.}$) is

A. $\geq Z\alpha$ B. $\leq Z\alpha$ C. $< -Z\alpha$ D. < 100

23. The estimate of the population proportion is to be with in $\pm$ 0.05, with a 95 percent level of confidence. The best estimate of the population proportion is 0.15. How large a sample is required?

A. 190 B. 196 C. 200 D. 170 E. None

24. The ability of an interval estimate to contain the value of the population parameter is described by the

A. confidence level C. precise value of the population mean μ

B. degrees of freedom D. degrees of freedom minus 1 E. None of these

25. The 0.01 level is used in an experiment and a one-tailed test with the rejection region in the lower (left) tail is applied. Computed Z is –1.8. This indicates:

A. H_o should not be rejected C. We should take a larger sample
B. We should reject Ho and accept H_1 E. None of these is correct
D. We should have used the 0.05 level of significance
26. What is the type of sample statistic that is used to make inference about a given type of population parameter?
A. The estimator of that parameter C. The confidence interval of that parameter
B. The confidence level of that parameter D. The point estimate of that parameter
27. Which statement is not true about the 95% confidence level?
A. Confidence intervals computed by using the same procedure will include the true population value for 95% of all possible random samples taken from the population.
B. The procedure that is used to determine the confidence interval will provide an interval that includes the population parameter with probability of 0.95.
C. The probability that the true value of the population parameter falls between the bounds of an already computed confidence interval is roughly 95%.
D. If we consider all possible randomly selected samples of the same size from a population, the 95% is the percentage of those samples for which the confidence interval includes the population parameter.
28. Branch of statistical inference which assumes that the underlying population distribution is known is
A. Parametric statistical inference C. Distribution free methods
B. Non-parametric statistical inference D. All the above
29. Which of the following statements is TRUE?
A. If we use the chi-square method of analysis to test for the difference between proportions, we must assume that there are at least 5 observed frequencies in each cell of the contingency.
B. A test for whether one proportion is higher than the other can be performed using the chi-square distribution
C. If we use the chi-square method of analysis to test for the difference between two proportions, the squared difference between the observed and theoretical frequencies should be large if the null hypothesis is true.
D. When using the $\chi 2$ tests for independence, one should be aware that the expected frequencies that are too small will lead to too big a type I error
30. If two events are independent, then
A. they must be mutually exclusive
B. the sum of their probabilities must be equal to one
C. their intersection must be zero
D. None of these alternatives is correct.
31. Chi-squared is computed by first squaring the differences between
A. Observed frequencies and expected frequencies.
B. Observed frequencies and the total sample size.
C. Observed frequencies and observed percentages.
D. Expected values and observed percentages.
32. The degrees of freedom for the Chi-Square test statistic when testing for independence in a contingency table with 4 rows and 4 columns would be
A. 12 B. 5 C. 7 D. 9
33. Which of the following is not an assumption of parametric inference methods?
A. Data is quantitative C. Sample is sufficiently large.

B. Population has a known distribution. D. Data is qualitative.

34. The chi-square test can be used:

A. For pairwise multiple comparisons of means. C. To test for homogeneity of proportions

B. To test for difference in two variances. D. To make inference about a population mean.

35. The boundaries of the confidence interval are called:

A. Confidence level B. The test statistics C. The degree of confidence D. The confidence limits E. Significance level

36. Considering the sample statistics, if the mean of sampling distribution is equal to population mean then the sample statistic is classified as

A. Unbiased estimator B. Biased estimator C. Interval estimator D. Hypothesis estimator

37. If the point estimate is 8 and the margin of error is 5 then the confidence interval is

A. 3 to 13 B. 4 to 14 C. 5 to 15 D. 6 to 16

38. To develop interval estimate of any parameter of population, the value which is added or subtracted from the point estimate is classified as:

A. Margin of efficiency B. Margin of consistency C. Margin of biasedness D. Margin of error

39. Which of the following statement is correct?

A. An interval estimate is an estimate of the range of possible values for a population parameter

B. An interval estimate describes a range of values that is likely not to include the actual population parameter

C. An interval estimate is an estimate of the range for a sample statistic

D. All of these E. None of these

40. A estimator which provides all the information provided by a sample with respect to the parameter is called

A. Unbiased B. Consistent C. Efficient D. Sufficient

41. In hypothesis testing, if the sample size is large and the population is assumed normal, then the test statistics used is

A. t B. χ^2 C. Z D. F E. None

42. Two events, A and B, are mutually exclusive and each have a non-zero probability. If event A is known to occur, the probability of the occurrence of event B is

A. One B. any positive value C. zero D. any value between 0 to 1

43. The method used to arrive at the “best-fitting” straight line in regression analysis is referred to as the:

A. Freehand method C. Least square method

B. Determination method D. Correlation method

E. None

44. Which of the following is not a distribution-free test?

A. The median test C. Chi-square test

B. The student t test D. Wilcoxon test E. None

45. A list of 5 pulse rates is: 70, 64, 80, 74, 92. What is the median for this list?

A. 74 B. 76 C. 77 D. 80

46. Statistics that is used to make valid inferences from the data for effective decision making among managers or professional is

A. Descriptive statistics C. None of the above

B. Inferential statistics D. All of the above

47. A professor asked the students in a class their heights. On the basis of this information, the professor states that the average height of all the students in the university is 21 years. This is an example of

A. census B. descriptive statistics C. an experiment D. Inferential statistics

48. A measure describing the characteristics of the population is known as

A. Parameter B. Sample C. Statistics D. Census

49. Which of the following terms best describes the data collected for the first time keeping in view the objective of the survey?

A. Primary data B. Secondary data C. Important data D. Personal data

50. Histogram is useful in locating graphically the value of:

A. Arithmetic mean B. Harmonic mean C. Mode D. Median

51. Which of the following graphical depictions of data represents cumulative frequencies?

A. Histogram B. Frequency polygon C. Ogives D. Pie charts

52. What is one of the distinctions between a population parameter and a sample statistic?

A. A population parameter is only based on conceptual measurements, but a sample statistic is based on a combination of real and conceptual measurements.

B A sample statistic changes each time you try to measure it, but a population parameter remains fixed.

C. A population parameter changes each time you try to measure it, but a sample statistic remains fixed across samples.

D. The true value of a sample statistic can never be known but the true value of a population parameter can be known.

53. Which one of the following variables is not categorical?

A. Age of a person.

B. Gender of a person: male or female.

C. Choice on a test item: true or false.

D. Marital status of a person (single, married, divorced, other)

54. On a December day, the probability of snow is 0.30. The probability of a cold day is 0.50. The probability of snow and cold is 0.15. Are snow and cold weather independent events?

A. No

B. Yes

C. Only if given that it snowed

D. Only when they are also mutually exclusive

55. given that event E has a probability of 0.31, the probability of the component of event E

A. 0.31 B. 0.69 C. Cannot be determined with the above information

D. Can have any value between 0 and 1

Information to answer question 56, 57 and 58:- The student body of a large university consists of 50% female students. A random sample of 8 students is selected

56. What is the probability that among the students in the sample exactly two are female?

A. 0.0896 B. 0.1094 C. 0.0007 D. 0.2936

57. What is the probability that among the students in the sample at least 7 are female?

A. 0.0168 B. 0.0461 C. 0.0352 D. 0.0313

58. What is the probability that among the students in the sample, 6 or more are male?

A. 0.1446 B. 0.0079 C. 0.0413 D. 0.0499

Information to answer the next three questions:- In order to estimate the average time spent on the computer terminals per student at a local university, data were collected from a sample of 81 business students over a one week period. Assume the population standard deviation is 1.2 hours

59. The standard error of the mean is:

A. 7.5 B. 0.014 C. 0.160 D. 0.133

60. With a 0.95 probability, the margin of error is approximately:

A. 0.26 B. 1.96 C. 0.21 D. 1.64

61. If the sample mean is 9 hours, then the 95% confidence interval is:

A. 7.04 to 11.96 hours C. 7.80 to 10.20 hours

B. 7.36 to 10.64 hours D. 8.74 to 9.26 hours

62. The range of probability is:

A. any value larger than zero

B. any value between minus infinity to plus infinity

C. zero to one

D. any value between -1 to 1