Question Set 2

1. The nominal scale of measurement has the properties of the

|  |  |
| --- | --- |
| a. | ordinal scale |
| b. | only interval scale |
| c. | ratio scale |
| **d.** | None of these alternatives is correct. |

2. Some hotels ask their guests to rate the hotel's services as excellent, very good, good, and poor. This is an example of the

|  |  |
| --- | --- |
| a. | ordinal scale |
| b. | ratio scale |
| c. | nominal scale |
| d. | interval scale |

3. Categorical data

|  |  |
| --- | --- |
| a. | indicate either how much or how many |
| b. | cannot be numeric |
| c. | are labels used to identify attributes of elements |
| d. | must be nonnumeric |

4. In a sample of 400 students in a university, 80, or 20%, are Business majors. Based on the above information, the school's paper reported that "20% of all the students at the university are Business majors." This report is an example of

|  |  |
| --- | --- |
| a. | a sample |
| b. | a population |
| c. | statistical inference |
| d. | descriptive statistics |

5. A frequency distribution is

|  |  |
| --- | --- |
| a. | a tabular summary of a set of data showing the relative frequency |
| b. | a graphical form of representing data |
| c. | a tabular summary of a set of data showing the frequency of items in each of several nonoverlapping classes |
| d. | a graphical device for presenting categorical data |

6. The relative frequency of a class is computed by

|  |  |
| --- | --- |
| a. | dividing the midpoint of the class by the sample size |
| b. | dividing the frequency of the class by the midpoint |
| c. | dividing the sample size by the frequency of the class |
| d. | dividing the frequency of the class by the sample size |

7. A researcher is gathering data from four geographical areas designated: South = 1; North = 2; East = 3; West = 4. The designated geographical regions represent

|  |  |
| --- | --- |
| a. | categorical data |
| b. | quantitative data |
| c. | label data |
| d. | either quantitative or categorical data |

8. A cumulative relative frequency distribution shows

|  |  |
| --- | --- |
| a. | the proportion of data items with values less than or equal to the upper limit of each class |
| b. | the proportion of data items with values less than or equal to the lower limit of each class |
| c. | the percentage of data items with values less than or equal to the upper limit of each class |
| d. | the percentage of data items with values less than or equal to the lower limit of each class |

**Exhibit 2-2**

A survey of 800 college seniors resulted in the following crosstabulation regarding their undergraduate major and whether or not they plan to go to graduate school.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Undergraduate Major** | | | | |
| **Graduate School** | **Business** | **Engineering** | **Others** | **Total** |
| Yes | 70 | 84 | 126 | 280 |
| No | 182 | 208 | 130 | 520 |
| **Total** | 252 | 292 | 256 | 800 |

9. Refer to Exhibit 2-2. Of those students who are majoring in business, what percentage plans to go to graduate school?

|  |  |
| --- | --- |
| a. | 27.78 |
| b. | 8.75 |
| c. | 70 |
| d. | 72.22 |

10. Refer to Exhibit 2-2. Among the students who plan to go to graduate school, what percentage indicated "Other" majors?

|  |  |
| --- | --- |
| a. | 15.75 |
| b. | 45 |
| c. | 54 |
| d. | 35 |

11. The collection of all possible sample points in an experiment is

|  |  |
| --- | --- |
| a. | the sample space |
| b. | a sample point |
| c. | an experiment |
| d. | the population |

12. The intersection of two mutually exclusive events

|  |  |
| --- | --- |
| a. | can be any value between 0 to 1 |
| b. | must always be equal to 1 |
| c. | must always be equal to 0 |
| d. | can be any positive value |

13. If P(A) = 0.4, P(B | A) = 0.35, P(A B) = 0.69, then P(B) =

|  |  |
| --- | --- |
| a. | 0.14 |
| b. | 0.43 |
| c. | 0.75 |
| d. | 0.59 |

Exhibit 3-2

A survey of a sample of business students resulted in the following information regarding the genders of the individuals and their selected major.

**Selected Major**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Gender** | **Management** | **Marketing** | **Others** | **Total** |
| Male | 40 | 10 | 30 | 80 |
| Female | 30 | 20 | 70 | 120 |
| **Total** | 70 | 30 | 100 | 200 |

14. In the exhibit 3-2 , Given that a person is male, what is the probability that he is majoring in Management?

|  |  |
| --- | --- |
| a. | 0.20 |
| b. | 0.25 |
| c. | 0.50 |
| d. | 0.40 |

15. In the exhibit 3-2 , What is the probability of selecting a male individual?

|  |  |
| --- | --- |
| a. | 0.15 |
| b. | 0.25 |
| c. | 0.45 |
| d. | 0.40 |

16. A description of the distribution of the values of a random variable and their associated probabilities is called a

|  |  |
| --- | --- |
| a. | probability distribution |
| b. | random variance |
| c. | random variable |
| d. | expected value |

17. An experiment consists of determining the speed of automobiles on a highway by the use of radar equipment. The random variable in this experiment is a

|  |  |
| --- | --- |
| a. | discrete random variable |
| b. | continuous random variable |
| c. | complex random variable |
| d. | simplex random variable |

18. In the textile industry, a manufacturer is interested in the number of blemishes or flaws occurring in each 100 feet of material. The probability distribution that has the greatest chance of applying to this situation is the

|  |  |
| --- | --- |
| a. | normal distribution |
| b. | binomial distribution |
| c. | Poisson distribution |
| d. | uniform distribution |

**Exhibit 5-1**

The following represents the probability distribution for the daily demand of computers at a local store.

|  |  |
| --- | --- |
| **Demand** | **Probability** |
| 0 | 0.1 |
| 1 | 0.2 |
| 2 | 0.3 |
| 3 | 0.2 |
| 4 | 0.2 |

19. Refer to Exhibit 5-1. The probability of having a demand for at least two computers is

|  |  |
| --- | --- |
| a. | 0.7 |
| b. | 0.3 |
| c. | 0.4 |
| d. | 1.0 |

20. The closer the sample mean is to the population mean,

|  |  |
| --- | --- |
| a. | the larger the sampling error |
| b. | the smaller the sampling error |
| c. | the sampling error equals 1 |
| **d.** | None of these alternatives is correct. |

21. As the sample size becomes larger, the sampling distribution of the sample mean approaches a

|  |  |
| --- | --- |
| a. | binomial distribution |
| b. | Poisson distribution |
| c. | normal distribution |
| d. | chi-square distribution |

22. A sample of 225 elements from a population with a standard deviation of 75 is selected. The sample mean is 180. The 95% confidence interval for  is

a. 105.0 to 225.0

b. 175.0 to 185.0

c. 100.0 to 200.0

d. 170.2 to 189.8

23. Whenever the population standard deviation is unknown and the population has a normal or near-normal distribution, which distribution is used in developing an interval estimation?

a. standard distribution

b. z distribution

c. alpha distribution

d. t distribution

24. A normal distribution with a mean of 0 and a standard deviation of 1 is called

|  |  |
| --- | --- |
| a. | a probability density function |
| b. | an ordinary normal curve |
| c. | a standard normal distribution |
| **d.** | None of these alternatives is correct. |

25. In a standard normal distribution, the probability that Z is greater than zero is

|  |  |
| --- | --- |
| a. | 0.5 |
| b. | equal to 1 |
| c. | at least 0.5 |
| d. | 1.96 |

**Exhibit 6-2**

The weight of football players is normally distributed with a mean of 200 pounds and a standard deviation of 25 pounds.

26. Refer to Exhibit 6-2. What percent of players weigh between 180 and 220 pounds?

|  |  |
| --- | --- |
| a. | 28.81% |
| b. | 0.5762% |
| c. | 0.281% |
| d. | 57.62% |

27. Refer to Exhibit 6-2. What is the minimum weight of the middle 95% of the players?

|  |  |
| --- | --- |
| a. | 196 |
| b. | 151 |
| c. | 249 |
| d. | 190 |

28. The p-value

a. is the same as the Z statistic

b. measures the number of standard deviations from the mean

c. is a distance

d. is a probability

29. A two-tailed test is performed at 95% confidence. The p-value is determined to be 0.09. The null hypothesis

a. must be rejected

b. should not be rejected

c. could be rejected, depending on the sample size

d. has been designed incorrectly

30. A machine is designed to fill toothpaste tubes with 5.8 ounces of toothpaste. The manufacturer does not want any underfilling or overfilling. The correct hypotheses to be tested are

|  |  |
| --- | --- |
| a. | H0:   5.8 Ha:  = 5.8 |
| b. | H0:  = 5.8 Ha:   5.8 |
| c. | H0:   5.8 Ha:   5.8 |
| d. | H0:   5.8 Ha:   5.8 |

31. The probability of committing a Type I error when the null hypothesis is true is

a. the confidence level

b. 

c. greater than 1

d. the Level of Significance

32. Independent simple random samples are taken to test the difference between the means of two populations whose variances are not known, but are assumed to be equal. The sample sizes are n1 = 32 and n2 = 40. The correct distribution to use is the

|  |  |
| --- | --- |
| a. | t distribution with 73 degrees of freedom |
| b. | t distribution with 72 degrees of freedom |
| c. | t distribution with 71 degrees of freedom |
| d. | t distribution with 70 degrees of freedom |

33. We are interested in testing to see if the variance of a population is less than 7. The correct null hypothesis is

|  |  |
| --- | --- |
| a. |  < 7 |
| b. | 2  7 |
| c. | S < 49 |
| d. | S > 49 |

34. A regression analysis between sales (in $1000) and price (in dollars) resulted in the following equation

 = 60 - 8X

The above equation implies that an

|  |  |
| --- | --- |
| a. | increase of $1 in price is associated with a decrease of $8 in sales |
| b. | increase of $8 in price is associated with an decrease of $52,000 in sales |
| c. | increase of $1 in price is associated with a decrease of $52 in sales |
| d. | increase of $1 in price is associated with a decrease of $8000 in sales |

35. In regression analysis, an outlier is an observation whose

|  |  |
| --- | --- |
| a. | mean is larger than the standard deviation |
| b. | residual is zero |
| c. | mean is zero |
| d. | residual is much larger than the rest of the residual values |

36. In a situation where the dependent variable can assume only one of the two possible discrete values,

|  |  |
| --- | --- |
| a. | we must use multiple regression |
| b. | there can only be two independent variables |
| c. | logistic regression should be applied |
| d. | all the independent variables must have values of either zero or one |

37. 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. |

38. A collection of statistical methods that generally requires very few, if any, assumptions about the population distribution is known as

|  |  |
| --- | --- |
| a. | parametric methods |
| b. | nonparametric methods |
| c. | distribution-fixed methods |
| d. | normal |

39. From a population of size 400, a random sample of 40 items is selected. The median of the sample

|  |  |
| --- | --- |
| a. | must be 200, since 400 divided by 2 is 200 |
| b. | must be 10, since 400 divided by 400 is 10 |
| c. | must be equal to the median of population, if the sample is ***truly random*** |
| **d.** | None of these alternatives is correct. |

**Exhibit 19-1**

Fifteen people were given two types of cereal, Brand X and Brand Y. Two people preferred Brand X and thirteen people preferred Brand Y. We want to determine whether or not customers prefer one brand over the other.

40. Refer to Exhibit 19-1. To test the null hypothesis, the appropriate probability distribution to use is

|  |  |
| --- | --- |
| a. | normal |
| b. | chi-square |
| c. | Poisson |
| d. | binomial |