Question Set 1

1. In a questionnaire, respondents are asked to mark their gender as male or female. Gender is an example of the

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

2. The scale of measurement that is used to rank order the observation for a variable is called the

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

3. Categorical data

|  |  |
| --- | --- |
| a. | must be numeric |
| b. | must be nonnumeric |
| c. | cannot be numeric |
| **d.** | **may be either numeric or nonnumeric** |

4. In a sample of 800 students in a university, 240, or 30%, are Business majors. The 30% is an example of

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

5. A frequency distribution is a tabular summary of data showing the

|  |  |
| --- | --- |
| a. | fraction of items in several classes |
| b. | percentage of items in several classes |
| c. | relative percentage of items in several classes |
| **d.** | **number of items in several classes** |

6. A tabular summary of a set of data showing the fraction of the total number of items in several classes is a

|  |  |
| --- | --- |
| a. | frequency distribution |
| **b.** | **relative frequency distribution** |
| c. | frequency |
| d. | cumulative frequency distribution |

7. Fifteen percent of the students in a school of Business Administration are majoring in Economics, 20% in Finance, 35% in Management, and 30% in Accounting. The graphical device(s) which can be used to present these data is (are)

|  |  |
| --- | --- |
| a. | a line chart |
| b. | only a bar chart |
| c. | only a pie chart |
| **d.** | **both a bar chart and a pie chart** |

8. Categorical data can be graphically represented by using a(n)

|  |  |
| --- | --- |
| a. | histogram |
| b. | frequency polygon |
| c. | ogive |
| **d.** | **bar chart** |

**Exhibit 2-2**

A survey of 800 college seniors resulted in the following cross tabulation 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. What percentage of the students does not plan to go to graduate school?

|  |  |
| --- | --- |
| a. | 280 |
| b. | 520 |
| **c.** | **65** |
| d. | 32 |

10. Refer to Exhibit 2-2. What percentage of the students' undergraduate major is engineering?

|  |  |
| --- | --- |
| a. | 292 |
| b. | 520 |
| c. | 65 |
| **d.** | **36.5** |

11. Each individual outcome of an experiment is called

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

12. A method of assigning probabilities based upon judgment is referred to as the

|  |  |
| --- | --- |
| a. | relative method |
| b. | probability method |
| c. | classical method |
| **d.** | **subjective method** |

13. If A and B are independent events with P(A) = 0.65 and P(A B) = 0.26, then, P(B) =

|  |  |
| --- | --- |
| **a.** | **0.400** |
| b. | 0.169 |
| c. | 0.390 |
| d. | 0.650 |

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 , What is the probability of selecting an individual who is majoring in Marketing?

|  |  |
| --- | --- |
| **a.** | **0.15** |
| b. | 0.20 |
| c. | 0.25 |
| d. | 0.40 |

15. In the exhibit 3-2 , What is the probability of selecting an individual who is majoring in Management, given that the person is female?

|  |  |
| --- | --- |
| a. | 0.15 |
| **b.** | **0.25** |
| c. | 0.35 |
| d. | 0.40 |

16. A probability distribution showing the probability of x successes in n trials, where the probability of success does not change from trial to trial, is termed a

|  |  |
| --- | --- |
| a. | uniform probability distribution |
| **b.** | **binomial probability distribution** |
| c. | hypergeometric probability distribution |
| d. | normal probability distribution |

17. An experiment consists of making 80 telephone calls in order to sell a particular insurance policy. 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. If you are conducting an experiment where the probability of a success is .02 and you are interested in the probability of 4 successes in 15 trials, the correct probability function to use is the

|  |  |
| --- | --- |
| a. | standard normal probability density function |
| b. | normal probability density function |
| c. | Poisson probability function |
| **d.** | **binomial probability function** |

**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 expected daily demand is

|  |  |
| --- | --- |
| a. | 1.0 |
| **b.** | **2.2** |
| c. | 2, since it has the highest probability |
| d. | of course 4, since it is the largest demand level |

20. Stratified random sampling is a method of selecting a sample in which

|  |  |
| --- | --- |
| a. | the sample is first divided into strata, and then random samples are taken from each stratum |
| b. | various strata are selected from the sample |
| **c.** | **the population is first divided into strata, and then random samples are drawn from each stratum** |
| **d.** | None of these alternatives is correct. |

21. In point estimation

|  |  |
| --- | --- |
| a. | data from the population is used to estimate the population parameter |
| **b.** | **data from the sample is used to estimate the population parameter** |
| c. | data from the sample is used to estimate the sample statistic |
| d. | the mean of the population equals the mean of the sample |

22. As the number of degrees of freedom for a t distribution increases, the difference between the t distribution and the standard normal distribution

a. becomes larger

**b. becomes smaller**

c. stays the same

d. None of these alternatives is correct.

23. If we change a 95% confidence interval estimate to a 99% confidence interval estimate, we can expect

**a. the size of the confidence interval to increase**

b. the size of the confidence interval to decrease

c. the size of the confidence interval to remain the same

d. the sample size to increase

24. The center of a normal curve is

|  |  |
| --- | --- |
| a. | always equal to zero |
| **b.** | **is the mean of the distribution** |
| c. | cannot be negative |
| d. | is the standard deviation |

25. The z score for the standard normal distribution

|  |  |
| --- | --- |
| a. | is always equal to zero |
| b. | can never be negative |
| **c.** | **can be either negative or positive** |
| d. | is always equal to the mean |

**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. The probability of a player weighing more than 241.25 pounds is

|  |  |
| --- | --- |
| a. | 0.4505 |
| **b.** | **0.0495** |
| c. | 0.9505 |
| d. | 0.9010 |

27. Refer to Exhibit 6-2. The probability of a player weighing less than 250 pounds is

|  |  |
| --- | --- |
| a. | 0.4772 |
| **b.** | **0.9772** |
| c. | 0.0528 |
| d. | 0.5000 |

28. What type of error occurs if you fail to reject H0 when, in fact, it is not true?

a. Type II

**b. Type I**

c. either Type I or Type II, depending on the level of significance

d. either Type I or Type II, depending on whether the test is one tail or two tail

29. In hypothesis testing, the tentative assumption about the population parameter is

a. the alternative hypothesis

**b. the null hypothesis**

c. either the null or the alternative

d. None of these alternatives is correct.

30. In hypothesis testing if the null hypothesis has been rejected when the alternative hypothesis has been true,

a. a Type I error has been committed

b. a Type II error has been committed

c. either a Type I or Type II error has been committed

**d. the correct decision has been made**

31. For a one-tailed hypothesis test (upper tail) the p-value is computed to be 0.034. If the test is being conducted at 95% confidence, the null hypothesis

a. could be rejected or not rejected depending on the sample size

b. could be rejected or not rejected depending on the value of the mean of the sample

c. is not rejected

**d. is rejected**

32. To construct an interval estimate for the difference between the means of two populations when the standard deviations of the two populations are unknown and it can be assumed the two populations have equal variances, we must use a t distribution with (let n1 be the size of sample 1 and n2 the size of sample 2)

|  |  |
| --- | --- |
| a. | (n1 + n2) degrees of freedom |
| b. | (n1 + n2 - 1) degrees of freedom |
| **c.** | **(n1 + n2 - 2) degrees of freedom** |
| d. | n1 - n2 + 2 |

33. 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 |

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

 = 30,000 + 4 X

The above equation implies that an

|  |  |
| --- | --- |
| a. | increase of $4 in advertising is associated with an increase of $4,000 in sales |
| b. | increase of $1 in advertising is associated with an increase of $4 in sales |
| c. | increase of $1 in advertising is associated with an increase of $34,000 in sales |
| **d.** | **increase of $1 in advertising is associated with an increase of $4,000 in sales** |

35. In a simple regression analysis (where Y is a dependent and X an independent variable), if the Y intercept is positive, then

|  |  |
| --- | --- |
| a. | there is a positive correlation between X and Y |
| b. | if X is increased, Y must also increase |
| c. | if Y is increased, X must also increase |
| **d.** | **None of these alternatives is correct.** |

36. In logistic regression,

|  |  |
| --- | --- |
| a. | there can only be two independent variables |
| b. | there are two dependent variables |
| **c.** | **the dependent variable only assumes two discrete values** |
| d. | the dependent variable only assumes two continuous values |

37. 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.** |

38. 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 |

39. The collection of statistical methods that require assumptions about the population is known as

|  |  |
| --- | --- |
| a. | distribution free methods |
| b. | nonparametric methods |
| c. | small populations |
| **d.** | **parametric methods** |

**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. to Exhibit 19-1. The null hypothesis that is being tested is

|  |  |
| --- | --- |
| a. | H0:  = 5 |
| b. | H0:  = 0.5 |
| c. | H0: P = 5 |
| **d.** | **H0: P = 0.5** |