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الإحصاء الحيوي المستوى الثالث ـ طب وجراحة الفم والاسنان
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1) Which of the following is a measure of variability?
  1) - Mean
  2) - Median
  3) + Standard deviation
  4) - Mode

2) What type of variable can take on an infinite number of values within a given range?
  1) - Discrete variable
  2) + Continuous variable
  3) - Nominal variable
  4) - Ordinal variable

3) Which of the following best describes a qualitative variable?
  1) - A variable that can be counted
  2) - A variable that can be measured numerically
  3) + A variable that describes categories or qualities
  4) - A variable that represents a rank order

4) A researcher wanted to do a study about doctor's income in Sana'a. he divided the hospitals into two sectors (private and public) then he took a sample from each sector? (choose the correct answer).
  1) - Systematic sampling
  2) + Stratified sampling
  3) - Random sampling
  4) - Cluster sampling

5) A researcher wanted to know doctors opinion about herbal therapy in Sana'a. For this study he choose randomly 3 hospitals out of 20 hospitals in Sana'a, and all doctors in the 3 hospital were asked? (choose the correct answer)
  1) - Systematic sampling
  2) - Stratified sampling
  3) - Random sampling
  4) + Cluster sampling

6) Blood Type ,an example of which type of data?
  1) - Quantitative
  2) - Ordinal
  3) + Nominal

7) Area of the Republic of Yemen, is an example of which type of data?
  1) + Quantitative
  2) - Ordinal
  3) - Nominal

8) Which one of the following variables is Qualitative?
  1) - Amount of fat in a piece of cheese
  2) - Salary of college professors
  3) + Favorite TV program
  4) - Age of a person

9) In general, which the level of data measurement is the best?
  1) - Nominal
  2) + Numerical continuous
  3) - Ordinal data

4)　　-　Numerical discrete

10)　If the data of the researcher is Normal Distribution, we will be expressed with?
1)　-　Median (interquartile rang)
2)　+　Mean ± standard deviation
3)　-　Mode
4)　-　Mean only

11)　If the data of the researcher is not Normal Distribution, we will be expressed with?
1)　+　Median (interquartile rang)
2)　-　Mean ± standard deviation
3)　-　Mode
4)　-　Mean only

12)　What is the main purpose of descriptive statistics?
1)　-　To make predictions about a population
2)　-　To collect data
3)　+　To summarize and describe data
4)　-　To analyze the relationships between variables

13)　What is a key difference between qualitative and quantitative variables?
1)　-　Qualitative variables are always numeric.
2)　-　Quantitative variables describe categories, while qualitative variables measure quantities.
3)　+　Qualitative variables describe categories, while quantitative variables measure quantities.
4)　-　There is no difference.

14)　Which of the following is a measure of central tendency?
1)　-　Range
2)　-　Variance
3)　+　Mean
4)　-　Standard Deviation

15)　Which of the following distributions is not normally distributed?
1)　-　Heights of adult men
2)　-　IQ scores
3)　-　Time until a computer fails
4)　+　Number of heads in 10 coin flips

16)　Which measure of central tendency is most affected by outliers?
1)　+　Mean
2)　-　Median
3)　-　Mode
4)　-　Range

17)　What is the formula for calculating the variance of a sample?
1)　-　Sum of squares divided by the number of data points
2)　+　Sum of squares divided by the number of data points minus one
3)　-　Square root of the standard deviation
4)　-　Sum of absolute deviations divided by the number of data points

18)　Which measure of central tendency is best to use when data is skewed?
1)　-　Mean
2)　+　Median
3)　-　Mode
4)　-　Range

19)　Which of the following best defines a variable?
1)　-　A fixed quantity
2)　+　A characteristic that can take on different values

3) - A specific data point
4) - None of the above

20) The graphical methods that used for testing the normality distribution are?
1) - Histogram
2) - Box-plot
3) + A& B

21) The test of univariate normality are ?
1) - kolmogorov-smirnov test
2) - shapiro-Wilk test
3) - Mardias test
4) + A & B

22) Wechsler adult intelligence scores: Normally distributed with $\mu = 100$ and $\sigma = 15$; X ~ N(100, 15), 95% of scores within?
1) - 85 to 115
2) + 70 to 130
3) - 55 to 145

23) **The z-score of an x-value is the number of standard deviations X is away from the mean. As a formula, this is?**

1) +
$$Z=(\mu -x)/\sigma$$

2) -
$$Z=(x-\mu)/\sigma$$

3) -
$$Z=(\sigma -\mu)/x$$

24) Which of the following is a measure of shape?
1) - Mean
2) - Median
3) + Skewness
4) - Variance

25) Which of the following is a non-parametric test corresponding to the independent t-test?
1) + Mann-Whitney U test
2) - Wilcoxon signed-rank test
3) - ANOVA
4) - Kruskal-Wallis test

26) Which of the following tests is used to assess the relationship between two categorical variables?
1) - ANOVA
2) - T-test
3) + Chi-square test
4) - Pearson correlation

27) What is the appropriate test for comparing the means of three or more independent groups?
1) - T-test
2) + ANOVA

3)   -   Mann-Whitney U test
4)   -   Wilcoxon signed-rank test

28)   What is the primary characteristic of a normal distribution?
1)   -   It is skewed to the right.
2)   +   It has a single peak and is symmetric.
3)   -   It has multiple modes.
4)   -   It has no outliers.

29)   What does the term "kurtosis" refer to?
1)   -   The symmetry of a distribution
2)   +   The peakedness of a distribution
3)   -   The spread of a distribution
4)   -   The mean of a distribution

30)   Which of the following tests is appropriate for testing the difference in means between two related groups?
1)   -   ANOVA
2)   +   Paired t-test
3)   -   Mann-Whitney U test
4)   -   Chi-square test

31)   In a standard normal distribution, what percentage of data falls within two standard deviations of the mean?
1)   -   50%
2)   -   68%
3)   +   95%
4)   -   99.70%

32)   Which correlation coefficient is more robust to outliers?
1)   -   Pearson's r
2)   +   Spearman's ρ
3)   -   Both coefficients are equally robust.
4)   -   Neither coefficient is robust to outliers.

33)   When would you prefer to use Spearman's Rank correlation over Pearson's correlation?
1)   -   When data is normally distributed
2)   +   When data is ordinal or not normally distributed
3)   -   When you want to measure causation
4)   -   When both variables are continuous

34)   If the correlation coefficient between two variables is 0.0, what can we conclude?
1)   -   There is a perfect positive relationship.
2)   -   There is a strong negative relationship.
3)   +   There is no linear relationship.
4)   -   There is a perfect negative relationship.

35)   What is the primary drawback of using Pearson's correlation?
1)   -   It cannot be calculated for large datasets.
2)   +   It assumes a linear relationship between variables.
3)   -   It does not provide a numerical value.
4)   -   It is only applicable to categorical data.

36)   What does the term "confounding variable" refer to in correlation analysis?
1)   -   A variable that has no effect on the correlation
2)   +   A variable that causes changes in both correlated variables
3)   -   A variable that is manipulated in an experiment
4)   -   A variable that is measured in the study

37)   When p value > α the researcher will ?
1)   +   Accept the null hypothesis

2)   -   Reject the null hypothesis and accept the Alternative.

38)   The parametric tests are used when the data?

1)   +   When the data is normally distributed

2)   -   When the data isn't normally distributed

39)   What is the primary limitation of Pearson's correlation coefficient?

1)   -   It cannot be used with large datasets.

2)   +   It assumes a linear relationship between variables.

3)   -   It does not provide a numerical value.

4)   -   It is always positive

40)   What is the typical significance level used in hypothesis testing?

1)   +   0.05

2)   -   0.5

3)   -   0.1

4)   -   0.15