Fourth year Biostatistics exam (60 Marks)2022/2023

Choose the correct answer (one mark each)

1. Which of the following type of the diagrams can be used to find out the relationship between two variables?
2. Pictogram c. Bar diagram
3. Histogram d. scatter diagram

2. Calculate the mode of 11, 18, 12, 33, 12, 32, 52

1. 11 b. 11.5 c. 12 d. 52

3. All the following are measures of central tendency, except:

1. Mean
2. Median
3. Mode
4. Variance
5. Which measure of central tendency is Influenced by extreme scores and skewed distributions?
6. Mean
7. Median
8. Mode
9. Range
10. A measure of central tendency which is calculated by numbers arranging in numerical order is:
11. Standard deviation
12. Range
13. Median
14. Mode
15. The proportion of observations fall above the median is:
    1. 68%
    2. 50%
    3. 75%
    4. 95%

1. A type of graphical presentation data used to explain correlation between dependent and independent variable is:
   1. Histogram
   2. Frequency polygon
   3. Frequency curve
   4. Scatter plot

1. A measure of dispersion of a set of observations in which it is calculated by the difference between the highest and lowest values produced is called:
2. Standard deviation
3. Variance
4. Range
5. Mode
6. Best graph for demonstration of relationship between ages and weight is:
7. Bar Diagram
8. Histogram
9. Scatter
10. Pie diagram
11. Quantitative data can be best represented by:
12. Pie chart
13. Pictogram
14. Histogram
15. Bar diagram
16. In an epidemiological study, the incubation periods obtained were 2, 5, 8, 10, 25, 10, and 30. The median is calculated to be:
17. 50
18. 22.5
19. 10
20. 5

12. What is the mode in statistics?

1. Value of middle observation
2. Arithmetic mean
3. Most commonly occurring value
4. Difference between the highest and lowest value
   * 1. Which of the following is not a quantitative variable?
5. Skin color c. Blood pressure
6. Weight d. Boys in the class
   * 1. The standard deviation is:
7. The square root of the variance
8. A measure of variability
9. An approximate indicator of how numbers vary from the mean
10. All of the above

15. A graph that uses vertical bars to represent data is called a \_\_\_\_.

* 1. Line graph
  2. Bar graph
  3. Scatterplot
  4. Vertical graph

16. What is the median of this set of numbers: 4, 6, 7, 9, 2000000?

* 1. 7.5
  2. 6
  3. 7
  4. 4

17.What is the mean of this set of numbers: 4, 6, 7, 9, 2000000?

* 1. 7.5
  2. 400,005.2
  3. 7
  4. 4

18.Bar charts may be distinguished from histograms at a glance because:

* 1. bar charts are not used for time series data
  2. histograms are used to display discrete data
  3. bar charts are based on area under the curve
  4. histograms do not have spaces between consecutive columns

19. Ogive is a line chart presenting the cumulative frequency of a continuous variable

a) true b) false

20. Bar chart is suitable for graphic presentation of continuous variables as age and weight

a) true b) false

21.Bar chart and Pie chart are used to represent qualitative data graphically

a) true b) false

22.The variance is a measure of dispersion that is severely affected by extreme values

a) true b) false

23. Age, systolic blood pressure and height are examples of

1. Qualitative variable
2. Discrete variable
3. Ordinal variable
4. Continuous variable

24. Sex, smoking and disease status can be presented as

1. Discrete variable
2. Ordinal variable
3. Binary variable
4. Continuous variable

25.Systolic blood pressure can be presented as

* 1. Continuous variable
  2. Qualitative variable
  3. Ordinal variable
  4. All of the above

26. Educational level is an example of :

* 1. Discrete variable
  2. Ordinal variable
  3. Binary variable
  4. Continuous variable

27.A bar chart be used to graphically represent

* 1. Educational level of a sample of rural Egyptian women
  2. Contraceptive methods used by the sample in (a)
  3. Number of children in the sample in (a)
  4. All of the above
     1. The standard deviation is:

1. The square root of the variance
2. A measure of variability
3. An approximate indicator of how numbers vary from the mean
4. All of the above
   * 1. A graph that uses vertical bars to represent data is called a \_\_\_\_.
   1. Line graph
   2. Bar graph
   3. Scatterplot
   4. Vertical graph
      1. Typhoid fever cases were reported throughout the world during the year 2000 – 2020 excluding African region. These cases can be best represented by:
5. Frequency polygon
6. Histogram
7. Line graph
8. Pictogram
   * 1. A study was conducted to assess the height of students of 4th year in 10 Medical colleges. The values of heights ranged between 5.5 – 5.10 feet. Which graph should be used by the researcher to present the obtained data?
9. Bar chart
10. Histogram
11. Pie chart
12. Line graph
    * 1. The algebraic relationship between the variance and standard deviation is that:
13. The variance is the square root of the standard deviation
14. The standard deviation is the square root of the variance
15. The standard deviation is the variance divided by the square root of n
16. The variance is the standard deviation divided by the square root of n
    * 1. What is not true about range?
17. Range equals to the difference between highest and lowest scores
18. Range is inclusive of the two extreme scores
19. Range is a measure of dispersion
20. Range equals to the standard error of mean
    * 1. The measures of central tendency for a quantitative (e.g. weight/kg)

are the following:

* 1. The arithmetic mean, median and range.
  2. The arithmetic mean, mode and range.
  3. The arithmetic mean, median and mode.
  4. The Median, mode and standard deviation

35. When the number of educated females is expressed as a percentage of total females present in a village It is known as:

a. Rate b. Ratio c. Proportion d. Cumulative frequency

36. A household survey of 10 families was conducted by students of 4th year Medical College In the data they collected, the ages of heads of families were: 32, 34, 35, 36, 36, 42, 44, 46, 48, and 52. The mean age of heads of families is

a. 38.5 b. 40 c. 40.5 c. 42

37. Which of the following graphs requires raw data?

1. scatter plot
2. histogram
3. Pie chart
4. Bar chart

38. Find the mode of the call received on 7 consecutive day 11,13,13,17,19,23,25

1. 11 b) 13 c) 17 d)23

39. If the standard deviation of a population is 10, then the variance will be

1. 5 c) 1000
2. 10 d) 100

40. Mortality Rates includes which of the following?

1. Crude Birth Rate
2. Crude death rates
3. Incidence rate
4. Prevalence rate
5. Total fertility rate

41. Death rate in Egypt in 2020 equals:

1. 1.75 deaths/1,000 population
2. 2.75 deaths/1,000 population
3. 3.75 deaths/1,000 population
4. 4.75 deaths/1,000 population
5. 5.75 deaths/1,000 population

42. Numerator in Crude Death Rate (CDR) is:

1. Number of male deaths due to all causes in a certain year and certain locality
2. Number of female deaths due to all causes in a certain year and certain locality
3. Number of deaths in infants (under 1yr age) in a certain year and certain locality
4. Number of all deaths due to all causes in a certain year and certain locality
5. Number of deaths due to cancer in a certain year and certain locality

43. Denominator in Maternal Mortality is:

1. Number of female deaths due to all causes in a certain year and certain locality
2. Number of female deaths due to cancer in a certain year and certain locality
3. Mid-year population for the same year and same locality
4. Number of live births for the same year and same locality

44. Standard deviation is the measure of

a. Chance b. Deviation from mean value c. Central tendency d. None

45. All of the following are uses of biostatistics except:

1. Resource allocation
2. Detect a health problem early, before you have any symptoms.
3. Magnitudes of a disease
4. Assessing risk factors

46. The major source of information about the health of population is its vital statistics. Which of the following are considered vital statistics?

1. Morbidity and mortality rates
2. Diseases incidence and prevalence
3. Deaths, marriages, fetal deaths, divorces.
4. Study of population characteristics

47. If the number of deaths from tuberculosis is expressed in relation to the total mid-year population, it is:

1. Case fatality rate
2. Age specific death rate
3. Proportionate mortality rate
4. Cause specific death rate

48. About 2500 deaths were reported in road side accidents during the year 2006 in Pakistan. If the total number of deaths due to accidents is expressed against the mid-year population of Pakistan in year 2006 this will give:

a) Crude death rate

b) Age specific death rate

c) Cause specific death rate

d) Case fatality rate

e) Proportional mortality rate

49. The absolute number of population of an area at any point in time is:

a) Count

b) Rate

c) Ratio

d) Proportion

e) Average

50. When total number of live births are expressed against the total population at a given place and during a given period. We are referring:

a) General fertility rate

b) Crude birth rate

c) Total fertility rate

d) Specific birth rate

e) Gross reproductive rate

51. Which of the following is true regarding screening test sensitivity? It equals:

1. True positive / false positive + false negative \* 100
2. False positive / true positive + false positive \* 100
3. True positive / true positive + false negative \* 100
4. True positive / true positive + true negative \* 100

52. Which of the following is true regarding screening test specificity? It equals:

1. True positive / true positive + true negative \* 100
2. False positive / true positive + false positive \* 100
3. True positive / true positive + false negative \* 100
4. True negative / true negative + false positive \* 100

53. Glucose tolerance test is a useful screening test for diabetes. The ability of the test to identify those who have the disease in question is called:

Validity

Yield

Reliability

Sensitivity

Specificity

54. A physician studied the association between plasma level of rennin and changes in BP. The data can be represented by:

1. Scatter diagram
2. Pie chart
3. Line diagram
4. Histogram
5. Bar chart

55. A new screening test for breast cancer was developed and tested against breast mammography. In 100 mammography positive cases, 90 were positive by the new test and among 100 mammography negative cases, only 30 proved positive by the new test. The sensitivity of that test is

1. 90 %
2. 30 %
3. 70 %
4. Cannot be determined by the available data
   1. A new screening test for breast cancer was developed and tested against breast mammography. In 100 mammography positive cases, 90 were positive by the new test and among 100 mammography negative cases, only 30 proved positive by the new test. The specificity of that test is
5. 90 %
6. 30 %
7. 70 %
8. Cannot be determined by the available data
   1. Social class is an example of :
9. Discrete variable
10. Ordinal variable
11. Binary variable
12. Continuous variable

58. The measures of central tendency for a quantitative (e.g., weight/kg)

are the following:

1. The arithmetic mean, median and range.
2. The arithmetic mean, mode and range.
3. The arithmetic mean, median and mode.
4. The Median, mode and standard deviation.

59.What is true among given data 20, 31, 31, 31, 25, 28, 35, 38, 31

1. Mean is 31
2. Range is 20-38
3. Median is 15
4. Mode is 15

60.If the standard deviation of a population is 9, then the variance will be

1. 3 c) 27
2. 9 d) 81