

**MEDICAL UNIVERSITY – PLEVEN, FACULTY OF PUBLIC HEALTH
MEDICAL STATISTICS – TEST 3**

Name.....

Fac. №.....Group.....Date.....

1. A random sample is one in which 50% of the elements of a population have equal chances of being sampled.
A. True B. False
2. Ordinal measures involve rank-ordering the values of a variable.
A. True B. False
3. The basic idea underlying sampling is to select a representative sample, from which the investigator can make inferences to the population.
A. True B. False
4. In a negatively skewed distribution, most of the scores are low, with a relatively few high scores spread along the x-axis.
A. True B. False
5. Which of the following measures of the variable 'weight' is nominal?
A. Weight in kg.
B. Weight as obese/overweight/normal/underweight/grossly underweight.
C. Weight as 'normal against pathological' (obese or grossly underweight).
6. A frequency polygon is appropriate for graphing continuously distributed variables.
A. True B. False
7. Given a normal distribution the mean, mode and median are equivalent.
A. True B. False
8. The range is calculated by adding the lowest score to the highest score in a distribution.
A. True B. False
9. The median is less affected than the mean by extreme scores of a distribution.
A. True B. False
10. The association between two variables can be plotted on a scattergram.
A. True B. False

11. Spearman's ρ (rho) is used when one or both variables are at least of interval scaling.
A. True B. False
12. Say that it is known that coronary disease occurs twice as frequently among males as females and three times more commonly among over 50 year-olds than those under 50. Given a stratified sample of 120, how many females over 50 would you expect in the sample?
A. 40 B. 30 C. 10 D. 5
13. The mean height of a student group is 167 cm. Assuming height is normally distributed this enables us to deduce that:
A. approximately half of all students are taller than 167 cm
B. being a student stunts your growth
C. approximately half of all students are shorter than 167 cm
D. A and C
E. none of these
14. What is the type of the hypothesis stating that mortality rates from lung cancer in smokers are higher than in non-smokers?
A. Directional
B. Non-directional
C. One-tailed
D. Two-tailed
E. A and C
15. Measures of dispersion include all of the following EXCEPT
A. mode
B. range
C. variance
D. standard deviation
E. coefficient of variation
16. Confidence limits are calculated using
A. the median and the range
B. the median and its standard error
C. the mean and the range
D. the mean and its standard error
17. When both variables are measured on an interval or ratio scale, Pearson's r is the most appropriate correlation coefficient.
A. True B. False
18. The calculated values of correlation coefficients range between 0 and -1 .
A. True B. False

19. The coefficient of determination is the square of the correlation coefficient.

- A. True B. False

20. If the relationship between x and y is positive, then as variable x decreases, variable y:

- A. increases
B. decreases
C. remains the same
D. changes linearly
E. varies

Case study 1: A random sample of 100 University students is found to have a mean of IQ of 110, with a standard deviation of 10.

Use this information to answer questions 21-23.

21. What is the standard error of the mean for a sample of this size?

- A. 10
B. 20
C. 1
D. 2

22. In order to calculate the 99% confidence interval of the mean, what t score will be used?

- A. 2.492
B. 2.617
C. 2.797
D. 1.711

23. Between what two possible scores can we be 99% confident that the true mean IQ for the students at the University lies?

- A. 95.5 ÷ 112.5
B. 85 ÷ 135
C. 107.4 ÷ 112.6
D. 104.1 ÷ 115.9

24. You are told there is a high inverse association between the variables 'amount of exercise' and 'incidence of heart disease'. The correlation coefficient consistent with the above statement is:

- A. 0.9 B. 0.5 C. - 0.3 D. - 0.8

25. State the level of significance of H_o with $\chi^2 = 6.2$ and $df = 2$:

- A. $p(H_o) < 0.05$
B. $p(H_o) > 0.05$
C. $p(H_o) < 0.01$
D. $p(H_o) > 0.01$

26. State the conclusion about the relationship between the gender of the college students and their smoking behaviour if the level of significance of H_0 is $p < 0.05$.
- A. There is no significant relationship
 - B. There is a significant relationship
 - C. There is not enough information
27. Sampling error of the mean:
- A. occurs because of poor sampling techniques
 - B. decreases as sample size increases
 - C. is independent of the standard deviation
 - D. is always equal to 1.
28. With the $\chi^2 = 12.7$ and $df = 3$, the difference between the compared groups is:
- A. due to chance
 - B. statistically significant
 - C. not statistically significant
29. Determine the statistical significance between the average weight of newborns in rural and urban areas if the degree of freedom is $df = \infty$ and $t = 1.9$.
- A. there is a significant difference between the means
 - B. there is no significant difference between the means
30. A group of newborn girls has a mean height of $\bar{X} = 50cm$ and a standard deviation of $s = 2$ cm. What are the limits of the normal group in case of seven normative groups?
- A. 48 – 52 cm
 - B. 46 – 54 cm
 - C. 52 – 60
 - D. None of the above

Right answers Mistakes Final mark Examiners: 1.

2.