

1. [S] Gender is usually seen as:
  - a. nominal data
  - b. ordinal data
  - c. interval data
  - d. ratio data
  - e. integer data
  
2. [S] Class ranking on Body Mass Index is:
  - a. nominal data
  - b. ordinal data
  - c. interval data
  - d. ratio data
  - e. quantitative data
  
3. [S] The most appropriate statistic for indicating central tendency in categorical data would be:
  - a. Mode
  - b. Median
  - c. Mean
  - d. Range
  - e. Standard deviation
  
4. [S] The mean of pulse on a sample of 30 patients seen by a family doctor in one-day is of 76 while the median is of 80. The skewness of pulse would be:
  - a. Positive
  - b. Negative
  - c. Zero
  - d. Irrelevant
  - e. Impossible to appreciate
  
5. [S] The following data represent the age of first episode of myocardial infarction of a series of male patients: 39, 50, 26, 45, 71, 51, 33, 40, 40, 51, 66, and 63. The sample size is equal to:
  - a. 66
  - b. 39
  - c. 11
  - d. 12
  - e. Could not be determined on provided data
  
6. [S] In creating a plot to show the relationship between level of hepatitis B antigen and serum alanine aminotransaminase, which variable should be shown on the X axis?
  - a. level of hepatitis B antigen
  - b. serum alanine aminotransaminase
  - c. both of them
  - d. none of them
  - e. impossible to tell
  
7. [S] A sample of 75 ovarian cancer-cases and 120 controls, aged between 40 and 50 years old was investigated. 40 of the ovarian cancer-cases and 45 of the controls had an age at menarche (age when periods begin) of less than 11 years. What are the values of TP-FP-FN-TN in the observed table:
  - a. 40-45-35-75
  - b. 35-75-40-45
  - c. 40-35-45-75
  - d. 40-75-35-45
  - e. 75-45-35-40
  
8. [M] The following data represent the age of first episode of myocardial infarction on a series of male patients: 38, 50, 23, 45, 70, 33, 25, 40, 50, 62, and 59. The values of quartiles are as follows:  $Q_1 = 35.5$ ,  $Q_2 = 45$  and  $Q_3 = 54.5$ . The following statements are true:
  - a.  $Q_2 - Q_1 = 9.5$
  - b.  $Q_3 - Q_2 = 9.5$
  - c. Data are asymmetrical distributed
  - d. Data are symmetrical distributed
  - e. Data are approximately symmetrical distributed

**The following statement is for questions 9.**

Suppose a certain ophthalmic trait is associated with eye colour. 300 randomly selected individuals are studied with results as follows:

Trait	Blue	Brown	Other	Total
Yes	70	30	20	120
No	20	110	50	180
Total	90	140	70	300

9a. What is the probability that a person has blue eyes?

9b. Which is the chance that a person has blue eyes?

10. [S] Which of the following expressions describes the relationship between the events A = a person has brown eyes and B = a person has blue eyes? (circle the correct answer)

- a. independent
- b. exhaustive
- c. simple
- d. mutually exclusive
- e. mutually non-exclusive

11. [S] The statistical series of incubation (expressed in days) for an infecto-contagious disease contains the following data: 7; 3; 4; 7; 6; 6; 4; 5; 3; 7; 5; 4; 7; 6; 2; 3; 5; and 6. The ascending cumulative absolute frequency of 7 corresponds to:

- a. 2 days
- b. 3 days
- c. 4 days
- d. 6 days
- e. 7 days

12. [S] A Study was conducted to analyze the efficacy of a new drug (Spectomycine) in treatment of gonorrhoea. A number of 46 patients were included in the study that has under a treatment with Spectomycine on a dose of 4 mg per day. The treatment with Penicillin G in a daily dose of 4.8 MUI applied on a sample of 30 patients with gonorrhoea had a chance of failure of 10%. What can we tell if we compare the 95% confidence intervals ( $Z = 1.96$ ) of success of treatment with Spectomycine and Penicillin G?

- a. Confidence intervals for the two treatments overlap on each other
- b. Treatment with Spectomycin has a higher success rate than treatment with penicillin G
- c. Treatment with Penicillin G is significantly better than treatment with Spectomycin
- d. There are no differences between success rates of the two treatments
- e. None is correct

13. [S] A pharmaceutical company has developed a new test for identifying pregnancy. The company tested the new product on 150 pregnant women; in 130 of these cases the tests were positive. The same test was applied on 150 women who were not pregnant; 145 of them had negative test. The specificity of the test is equal to:

- a. 0.97
- b. 1.00
- c. 0.79
- d. 0.87
- e. None is correct

14. [M] Which of the following variables are ordinal?
- Socio-economic status (low, middle, high)
  - Type of carcinoma (lung, liver, etc.)
  - Likert scale (strongly agree, agree, disagree, strongly disagree)
  - Response to a treatment (no response, partial response, complete response)
  - Blood type (A, B, AB, or O)
15. [S] The following variables are dichotomial, EXCEPT:
- Gender (F = female, M = male)
  - Smoking (Yes/No)
  - Likert scale (strongly agree, agree, disagree, strongly disagree)
  - Breastfeeding (Yes/No)
  - Chronic hepatitis C (0 = No, 1 = Yes)
16. [S] A statistical series consists of values of heart volume measured by heart ultrasound has the coefficient of variation equal to 0.10. The statistical series is:
- relatively homogenous
  - homogenous
  - heterogeneous
  - relatively heterogeneous
  - partial homogenous
17. [S] Let A be the event that in a family with 2 children the first born child to present a genetic disease; let B be the event that in a family with 2 children the second born child to present a genetic disease. It is known from previous studies that the probability of the genetic disease of interest is 0.25 for the first born child and 0.10 for the second born child. Which is the probability that both children from a family to present the genetic disease of interest if the two events are independent?
- 0.350
  - 0.150
  - 0.025
  - 0.325
  - None is correct
18. [S] The statistical series of incubation (expressed in days) for a infecto-contagious disease contains the following data: 7, 3, 5, 9, 10, 6, 8, 4, 5, 3, 7, 6, 5, 4, 8, 8, 7, 10, 10, 3, 3, 5, 6, 7, and 8. The percentage of patients with less than or equal to 8 incubation days is:
- 68%
  - 0.68
  - 0.84
  - 0.88
  - 84%
19. [S] The arithmetic mean of total of decayed, missing and filled teeth on a sample of children who attend to general dental surgery was of 1.75 with a standard deviation of 1.71 (sample size of 122). The 95% confidence interval ( $Z_{\alpha} = 1.96$ ) associated to mean is:
- 0.3034
  - 1.4466 - 2.0534
  - 0.0400 - 3.4600
  - 0.0400 - 3.4600
  - Could not be calculated based on provided data
20. [S] A sample of 15 cervical cancer-cases and 12 controls, aged between 35 and 45 years old was investigated. 12 of the cervical cancer-cases and 10 of the controls had at least one Chlamydia infection (considered as risk factor for cervical cancer). The risk ratio of having cervical cancer when Chlamydia infection occurred is equal to:
- 0.8
  - 0.5
  - 0.6
  - 0.4
  - 0.7

21. [M] Cluj County residents prefer to resort to specialized medical services in Cluj-Napoca, thus bypassing the services from their place of residence. This phenomenon most often affects small villages and can result in settlements for the abolition of health services in those areas. A study is conducting by applying a survey via the telephone network Romtelecom in order to determine the motivations of this "emigration" to health services in Cluj-Napoca. Which of the following are correct?
- a. Target population: residents from Cluj County
  - b. Available population: residents from Cluj County with Romtelecom subscription
  - c. General characteristics of interest: age, sex, occupation, education
  - d. Specific characteristics of interest: type of health service, frequency of using the health service, the place where is located in the health service used
  - e. Cannot be determined from the data
22. The values of a diagnosis test scores of 15 psychiatric patients hospitalized in Cluj-Napoca, from January to March 2009 were recorded in ascending order as follows: 4, 7, 7, 9, 10, 11, 13, 15, 15, 15, 17, 17, 19, 19, and 20. After calculating the mean, median, and mode, an error is discovered: one of the 15's is really a 17. The following measures of central tendency will change:
- a. The mean only
  - b. The mode only
  - c. The median only
  - d. The mean and mode
  - e. Mean, mode and median