

Course No: BUS 1326
Course Title: Principles of Biostatistics
Date: 28 /03/2012
No. of Questions: (5)
Time: 1hour
Using Calculator (yes)

University of Palestine



Midterm Exam
Second term 2011/2012
Total Grade: 50 Marks

Instructor Name: Dr. Amjad El-Shanti
Student No.: _____
Student Name: _____
College Name: Business & Finance Administration
Dep./Specialist: Management (English)
Using Dictionary (No)

Question One : (5 marks)

Put the sign (✓) against the right sentences and the sign (X) against the wrong sentences:

- 1- Constant data are observations which vary from time to time and from person to person ().
- 2- The histogram is suitable to represent data from a simple frequency distribution table for quantitative discrete variables ().
- 3- The range is a rough measure of central tendency since it neglects all intermediate observations ().
- 4- The mean is the best measure of central tendency for skewed distribution ().
- 5- The coefficient of variation is a measure of relative variation and expressed as percentage ().

Question Two: (15 marks)

Select the correct answer from the following alternatives for each sentence:

- 1- Which of the following variable is a quantitative variable:
 - a) Blood group
 - b) Country of birth
 - c) Blood pressure by mmHg
 - d) Birth weight group
- 2- Which of the following do not apply to normal distribution :
 - a) It is symmetric and bell shaped
 - b) Mean=Median=Mode
 - c) Bimodal
 - d) Area under curve=1
- 3- Data from a rural area of China show that the mean age of stopping breastfeeding is 8 months and the median age is 3.5 months. We can calculate:
 - a) The data range is 11.5 months
 - b) The distribution of breastfeeding duration is not symmetric
 - c) Approximately 50% of the children breastfeed for 8 months
 - d) The mode is greater than mean.
- 4- Diastolic blood pressure (DBP) of a group of students is normally distributed with a mean of 65 mmHg and a standard deviation of 7.5 mmHg. Which of the following statement is false :
 - a) Approximately 95% of the students have DBP between 50 and 80 mmHg
 - b) Approximately 50% have a DBP above 65 mmHg
 - c) The distribution of DBP is not bimodal
 - d) About 5% of the students have DBP below 65
- 5- In a test, your result is equivalent to a standard unit value (Z) of -0.025. This implies:
 - a) You performed poorly when compared to others
 - b) You performed very well when compared to others
 - c) Your result was slightly above average
 - d) Your result was slightly below average
- 6- The median is:
 - a) Always less than the mean
 - b) The middle observation only if the observations are in order
 - c) The most frequent observation
 - d) Always the same as the mode

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- 7- Which of the following used for representing qualitative variable:
- Histogram
 - Polygon curve
 - Line chart
 - Pie chart
- 8- Which of the following is a measure of spread:
- Variance
 - Mean
 - Mid-range
 - Median
- 9- The following data are the age by years for 5 children: 3, 4, 5, 6, and 7. Which of the following is correct according to the data:
- The mean= The median= The mode
 - The mode=0
 - The coefficient of variation= 50%
 - The standard deviation=2 years
- 10- The mean of Fasting Blood glucose (FBG) of 20 patients admitted in surgical department of hospital was 80 mg/dl with standard deviation 10 mg/dl. Suppose that the FBG was normally distributed. Which of the following statement is false :
- The proportion of patients who's FBG more than 100mg/dl was 5%
 - The proportion of patients who's FBS more than 100mg/dl was equal to the proportion of patients who's FBG less than 60mg/dl
 - The standard unit value of -2 corresponded to FBS value of 60mg/dl
 - The most frequent FBG was observed among patients was 80 mg/dl
- 11- Which of the following statements is correct according to the following three data sets:
Data Set A: (R, B, R, B, R, W, W, W, B, Y)
Data Set B: (R, B, R, B, R, W, W, W, B)
Data Set C: (R, B, R, Y, B, W, W). suppose that these letters are the colors of cars in three streets.
- There are trimodal in data sets A and C
 - No mode for any above data sets.
 - The mode is never determined in like these data sets
 - The mode for data set B is 0
- 12- The rank of the second quartile (Q2) for the following data (5,6,7,8,9,9,10) is :
- 4
 - 5
 - 7
 - 8
- 13- The semi-inter-quartile- range of the following data (1,2,3,4,5,6,7) is:
- 1
 - 2
 - 4
 - 8

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- 14- Which of the following is correct according the following three data sets of Patients' age in three clinics:
 Clinic A: 18, 18, 21, 22, 22, 19, 23, 20, 17
 Clinic B: 10, 18, 20, 20, 19, 20, 19, 36, 18
 Clinic C: 20, 20, 20, 14, 14, 20, 20, 26, 26
- The spreads of age in the three clinics are similar.
 - The spread of age in Clinic A is lesser than that of clinic B
 - The standard deviation of age in Clinic C is lesser than that of Clinic A
 - The coefficient of variation in Clinic A is equal to that of Clinic C
- 15- According to the data sets of question 14, mean= median=mode of patients' age in:
- Clinic A
 - Clinic B
 - Clinic C
 - Clinic A,C

Question Three: (10 marks)

The following table shows the distribution of 50 families according to the number of persons per family:

No. of persons /family	No. of Families
2-	10
5-	25
8-	10
11-	4
14-16	1
Total	50

- What is the variable here? What is its type? And what are the graphs suitable to represent it?
- Find the mid-range, median, and arithmetic mean?
- Find the standard deviation and coefficient of variation using the semi-inter-quartile range?
- Compute the mode using the lever method?

Question Four: (10 marks)

On measuring the heights by cm of a group of students of Palestine University in Gaza the following data were obtained:

147	150	174	168	172	156	158	147	150	153
156	162	159	157	164	163	170	172	168	159
179	171	166	157	162	154	158	136	154	160

- Construct a simple frequency distribution table using width interval=10?
- Draw a histogram and then a curve of distribution?
- Determine the mode of students' heights using the graphical method?
- Determine the distribution of heights of students in Palestine University whether normal or skewed? Explain the reason for your selection?

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Question Five: (10marks)

Suppose the following data which represents the delayed time by minutes of 20 employees in the hospital from their job in the morning were normally distributed:

15	12	5	4	6	9	10	5	6	4
7	6	9	10	3	5	4	2	10	8

- A- What proportion of such employees will delay from their job in the morning more than 5 minutes?
- B- What is the range of delayed time of 60% of such employees?
- C- What is the standard unit (Z) which corresponds the delayed time of 9.3 minutes?
- D- What proportion of such employees will delay from their job between 4 to 11 minutes?

*You can use the following Formulae to answer the previous questions:

- % of category= (Frequency of category/total frequency) X 100
- Sectoral angle= (Frequency of each category/ Total frequency)X 360
- Mid rang= (Smallest observation- Largest observation)/2
- Force X Length (x) = resistance X (total length-x)
- Median= Lower limit of median interval + (Special rank X width of median interval/observed frequency of median interval)
- $\bar{X} = \frac{\sum X_i}{n}$ Or $\bar{X} = \frac{\sum f_j X_j}{\sum f_j}$
- $S = \sqrt{\frac{\sum X_i^2 - \frac{(\sum X_i)^2}{n}}{n-1}}$ Or $S = \sqrt{\frac{\sum f_j X_j^2 - \frac{(\sum f_j X_j)^2}{\sum f_j}}{\sum f_j - 1}}$
- $CV = \frac{S}{\bar{X}} \times 100$ Or $CV = \frac{SIQR}{Q2}$
- $SIQR = \frac{Q3 - Q1}{2}$
- $Z = \frac{X - \bar{X}}{S}$

N.B: *Answer all the questions in the answer sheet.

*Table A: Areas under the normal curve is attached to the questions' paper

End of Questions
Good Luck