Cairo University
Faculty of science
Mathematics Department
45 mins.

Mid Term (Fall 2018)
Mathematical Statistics
STAT 100

Name:---------- ID: ----------

Answer the following questions: (The exam is in <u>two</u> pages)

In each question write your answer clearly in the indicated **<u>table</u>**

(Question 1) (4 Points) Listed below are the numbers of English words defined on 12 pages of a dictionary:

68 49 21 55 57 61 70 42 59 50 66 99

Find the following measures for this sample (round off to one decimal place).Use the range rule of thumb to find the unusual values in the sample

Mean	Median	Range	Variance	Minimal Usual Value	Maximal Usual Value	Unusual Values

(Question 2) (2 Points) Choose the correct answer and fill in the following table (Only <u>one</u> choice)

1	2	3	4

1- Which rules for identifying unusual results by probabilities are correct?

(a) If P(x or more) ≤ 0.05, then x is unusually low, if P(x or fewer) $\leq$ 0.05, then x is unusually high.

(b) If P(x or more) ≤ 0.05, then x is unusually high, if P(x or fewer) ≤ 0.05, then x is unusually low.

(c) If P(x) ≤ 0.05, then x is unusual.

(d) If P(x) = 0.05, then x is unusual.

2- What is the meaning of the rare event rule in statistics?

(a) If the probability of a particular observed event is extremely small, we conclude

that the event is impossible; in that case its probability must be set to zero.
(b) If, under a given assumption, the probability of a particular observed event is extremely small, we conclude that the assumption is probably not correct.
(c) If an event is a rare event, we use the addition rule to calculate the probability; otherwise we use the multiplication rule.
(d) An event is a rare event if, under a given assumption, its probability is either less than 0.05 or greater than 0.99. In both cases we conclude that the assumption is probably not correct.

3-What is the difference between mean and median of a set of data?
(a) The mean is the arithmetic average of the data values while the median is the average of the largest and smallest data values.
(b) The mean is the average of the largest and smallest data values while the median is the middle value when the original data values are arranged in order of increasing (or decreasing) magnitude.
(c) The mean is the arithmetic average of the data values while the median is the middle value when the original data values are arranged in order of increasing (or decreasing) magnitude.
(d) The mean is the arithmetic average of the data values while the median is the square of the mean.

4-The data that cannot be ordered are called?

(a) Discrete (b) Nominal
(c) Ordinal (d) Continuous

(Question 3) (4 points)

Use the data in the following table, which summarizes blood groups and Rh types for 100 subjects

	O	A	B	AB
RH^+	30	27	13	9
RH^-	12	6	2	1

Answer	(a)	(b)	(c)	(d)
Probability				

(a) If a subject is randomly selected, find the probability of getting someone who is group B and type Rh–.

(b) If a subject is randomly selected, find the probability of getting someone who is group B or type Rh–.

(c) If 2 of the 100 subjects are randomly selected without replacement, find the probability that they are both group B and type Rh–.

(d) If 2 of the 100 subjects are randomly selected with replacement, find the probability that they are both group B and type Rh–.

Best Wishes
Areeg Abdalla