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UNITY UNIVERSITY COLLEGE
SCHOOL OF DISTANCE AND CONTINUING EDUCATION

Worksheet for Introduction to Statistics (Stat 192)

This is a test paper you are expected to do on your own. It carries 15 points. The test paper should be completed and mailed to the School of Distance and Continuing Education for evaluation. Do not try to complete the worksheet until you have covered all the lessons and exercises in the course material.

Any questions in the course that you have not been able to understand should be stated on a separate sheet of paper and attached to this worksheet. Your tutor will clarify them for you.

After completing this test paper, be certain to write your Name, Id.No and Address on the first page. Your Name and Id.No on the other pages only.

I. Multiple choice questions: Choose the best answer and write the better of your choice in the given space.

- _____ 1. The following are limitations of statistics except
- A. Statistics does not deal with individual value
 - B. Statistical interpretation requires high skill and understanding of the subject matter
 - C. Statistical conclusions are not universally true
 - D. Statistical results may be misused
 - E. None of the above
- _____ 2. In presentation of data graphically, the one that is drawn by using the class marks of each class intervals against their actual frequencies is called:
- A. Less than ogive
 - B. Frequency polygon
 - C. Histogram
 - D. Bar grape
 - E. All of the above
- _____ 3. If the fifth deciles, the twenty-fifth percentile and the third quartile are 10, 5 and 25 respectively then median of the data equals
- A. 5 B. 10 C. 25 D. 15 E. None
- _____ 4. If the range and coefficient of range of data are 90 and 0.3 respectively, the largest value on the data is _____
- A. 195 B. 300 C. 105 D. 150 E. None
- _____ 5. Which of the following is not true about the binomial distribution

- A. The probability of success remains constant from trial to trial
- B. The outcome of any observation is independent of the outcome of any other observation or trial
- C. It describes the distribution of probabilities, when there are only two mutually exclusive outcomes for each trial of an experiment.
- D. The probability of failure may not remain constant over all the observations for a finite number of trials.
- E. None

_____ 6. The number of three digital numerals that can be formed by using the numbers 2, 3, 5, 6 and 7 if repetition is allowed is:
 a. 60 b. 125 c. 90 d. cannot be determined
 e. none

_____ 7. Which of the following is not a probability sampling method
 a. Using a table of Random numbers
 b. Cluster sampling method
 c. Quota sampling method
 d. Stratified sampling method e. None

_____ 8. The number of ways the vowels of the English alphabet taken at a time can be arranged is:
 a. $C(5, 1)$ b. $P(5, 1)$ c. $P(5, 5)$ d. $C(5, 5)$
 e. none

_____ 9. If the current wholesale prices charged by a random sample of 10 soap producers (in Birr) are:

1.00	1.35	1.50	1.95	0.9
1.25	1.00	1.2	0.9	1.5

Based on this information, you might set the wholesale price per unit of your product at:

- A. 1.2 B. 1.155 C. 0.9 D. 1.25 E.

None

- _____ 10. The amount of time required per individual at a bank feller's window has been found to be normally distributed with a standard deviation of 45 seconds. A random sample of 20 individuals required a total of 40 minutes to complete their transactions.

At 95 percent confidence level, what is the maximum number of individuals that can be served per day on the average at the bank? (Assume an 8-hour working day)

- A. 240 B. 181 C. 354 D. 12
E. None
- _____ 11. You are given the following information relating to a frequency distribution comprising 10 observations:

$\bar{X} = 5.5$, $\bar{Y} = 4.0$, $\sum x_i^2 = 385$, $\sum y_i^2 = 192$ and $\sum (x_i + y_i)^2 = 947$. Then r_{xy} (the correlation coefficient between x and y) equals:

- A. 2.87 B. 1.79 C. -0.681 D. 0.8
E. None
- _____ 12. From some bivariat data, the following figures are given

$\bar{X} = 53.2$, $\bar{Y} = 27.9$

Reg. Coeff. Of Y on X, $b_{yx} = -1.5$

Reg. Coeff. Of X on Y, $b_{xy} = -0.2$

The most likely value of y when X = 60 is

- A. 59 B. 38.1 C. 43.0 D. 17.7
E. None

II. Short answer problems: Write the answer in the provided space.

1. If the AM and GM of two positive observations X_1 and X_2 are 12.5 and 12. Respectively, then
 - a) The HM is _____
 - b) The values of X_1 and X_2 are _____
2. The sum of a set of 100 observations is 4000 and the sum of their squares is 162,500 and median is 41. Then the coefficient of skewness is _____
3. The mean age of 50 candidates was found to be 32 and the standard deviation 7. Later, it was discovered that the age 57 and 80 were wrongly taken as 27 and 18. Find
 - a) The correct mean _____
 - b) The correct standard deviation _____
4. The mean and variance of a set of data are 96 and 9 respectively. If 6 are subtracted from each observation and the resulting values are multiplied by $\frac{2}{3}$. Then
 - a) The new mean and SD will be _____
 - b) The coefficient of variation will be _____
5. For two mutually exclusive events A and B, if $P(A) = 0.6$ and $P(B) = 0.32$, then
 - a. $P(A' \cup B') =$ _____
 - b. $P(A \cap B) =$ _____
 - c. $P(A \cup B) =$ _____
6. What is the probability that a leap year, selected at random, will contain 53 Sundays?

 _____.
7. Define normal distribution and state its chief characteristics

 _____.
8. When the number of trials is very large, then

- a. Binomial distribution tends to _____
- b. Poisson distribution tends to _____
9. State briefly the relative importance of sampling over complete enumeration

_____.

10. We want to estimate the population mean with 5, with a 99 percent level of confidence. The population standard deviation is estimated to be 15. How large a sample is required?

_____.

11. A sample of the scores on an examination given to both males and females in statistics 192 are:

Males: 72, 69, 98, 66, 85, 76, 79, 80, 77

Females: 81, 67, 90, 78, 81, 80, 76

At the 01 significance level, is the mean grade of the females higher than that of the males? _____(yes/No)

12. The following sample observations were selected:

X	4	5	3	6	10
Y	4	6	5	7	9

a) The normal (kar person's) correlation coefficient equals_____

b) The rank correlation coefficient equals _____

III. Work out problems: Answer the following questions in the space provided

- 1) If the price of a commodity doubled in a period of 4 years, what is the average increase per year?

_____.

2) The following GFD is indicating age distributions of 50 students in a class

Age (In year)	No. of students
16 - 23	2
24 - 31	10
32 - 39	25
40 - 47	8
48 - 55	5

For this data

- Compute the mean age
- The median age
- The upper quartile and interpret
- How much percent of the students are below age 44
- The standard deviation

3. Four different brands of light bulbs are being considered for use in a large manufacturing plant. The director of purchasing asked for samples of 100 from each manufacturer. The numbers of acceptable and unacceptable bulbs from each manufacturer are shown below. At the .05 significance level, is there a difference in quality of the bulbs?

	Manufacturer				
	A	B	C	D	
Acceptable	12	8	5	11	
Un acceptable		88	92	95	89
Total	100	100	100	100	