Seat No:_____ Enrollment No:_____

PARUL UNIVERSITY

COLLEGE OF AGRICULTURE

B.Sc.(Hons.) Agriculture, Winter 2017 – 18 Examination

Semester: 2 **Date: 10/01/2018**
Subject Code: 20111151 **Time: 10:30 am to 1:00 pm**
Subject Name: Statistics **Total Marks: 60**

Instructions
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Do as Directed.

A. Fill in the blanks. (Each of 0.50 marks) **(10)**

1. A systematic arrangement of classes and frequencies is known as _____.
2. Mid values of the class intervals are also called _____.
3. Arithmetic Mean is a measure of _____.
4. Lack of equality in the values of observation is called measure of _____.
5. Square of standard deviation is called _____.
6. If a bag contains 5 red balls and 3 black balls then the chance of a randomly drawn ball being red is _____than the chance of a randomly drawn ball being black
7. If a bag contains 9 red balls then the probability of a randomly drawn ball being red is _____.
8. Statistic is a descriptive measure of some characteristic of _____.
9. $\bar{x}=\frac{\sum x_i}{n}$ is an _____of μ .
10. Paired t-test is used when observations in both the samples are _____.
11. For testing hypothesis H_0: $\mu_1 = \mu_2$ with the help of t-test, the degree of freedom is _____.
12. A hypothesis is an assertion or statement about _____of the population.
13. Value of χ^2 lies between _____ and _____.
14. If corresponding to a change in one variable there is change in the other variable then there exists _____between the two variables.
15. If two regression lines are same, then the correlation between the two variables is_____.
16. The assumption of independence of errors in an experiment is justified because of_____.
17. The number of times the treatment is repeated in an experiment is known as _____.
18. Completely Randomised Experiment is not suitable for _____experiments
19. In a R.B.D. the number of blocks is equal to the number of _____.
20. An experiment involving two or more factor each at various levels is called a _____ experiment.

B. Multiple choice type questions. (Each of 0.50 mark) **(10)**

1. A simple table contains data on
   a) Two characteristics
   b) One characteristics
   c) Several characteristics
   d) Three characteristics
2. In a component bar diagram the length of the bar
   a) Will be same for all
   b) Depends on the total
   c) will not be same
   d) none of these
3. With the help of histogram we can draw
   a) Frequency polygon
   b) Frequency distribution
   c) frequency curve
   d) all the above

4. The middle value of an ordered series is called
   a) 2nd quartile
   b) 50th percentile
   c) 5th decile
   d) all the above
5. Which measure is affected most by the presence of extreme values?
   a) Range
   b) Quartile Deviation
   c) Standard Deviation
   d) Mean deviation
6. Probability is expressed as
   a) Ratio
   b) Proportion
   c) percentage
   d) all the above
7. For a Poisson distribution
   a) mean > variance
   b) mean ≠variance
   c) mean = variance
   d) mean < variance
8. If each and every unit of population has equal chance of being included in the sample, it is known as
   a) Restricted sampling
   b) Simple random sampling
   c) Purposive sampling
   d) None of the above
9. A hypothesis may be classified as
   a) Simple
   b) Null
   c) Composite
   d) All the above
10. In paired t test with n observations in each group the degrees of freedom is
   a)n
   b)n-2
   c)n-1
   d)n+1
11. Degrees of freedom for Chi-square in case of contingency table of order (4 ×3) are
   a)12
   b)8
   c)9
   d)6
12. Limits for correlation coefficient.
   a) $-1 \leq r \leq 1$
   b) $-1 \leq r \leq 0$
   c) $0 \leq r \leq 1$
   d) $1 \leq r \leq 2$
13. When the correlation coefficient r = +1, then the two regression lines
   a) are perpendicular to each other
   b) are parallel to each other
   c) coincide
   d) none of these
14. For valid conclusions we should have
   a) Unbiased estimate
   b) random estimate
   c) biased estimate
   d) none of these
15. CRD can be used with
   a) Equal replication
   b) Equal and unequal replication
   c) unequal replication
   d) single replication
16. RBD can be used with
   a) Equal replication
   b) Equal and unequal replication
   c) unequal replication
   d) single replication
17. In a Latin Square design the number of rows will be equal to
   a) No. of columns
   b) No. of Replications
   c) No. of Treatments
   d) No. of Columns & Number of Treatments
18. In a Latin Square design with 5 treatments the number of experimental units will be equal to
   a) 25
   b) 34
   c) 20
   d) 26

19. When there are 5 treatments each replicated 4 times the total number of experimental plots will be

a) 5 c) 4

b) 9 d) 20

20. Response variable is also called as

a) Independent variable c) dependent variable

b) treatment d) error

C. Give the sentence true or false. (Each of 0.50 mark) **(05)**

1. Sub-divided bar diagram is also called Component bar diagram.
2. Geographical classification means, classification of data according to Region.
3. In a frequency curve the points are joined by bits of straight lines.
4. Mean is affected by extreme values.
5. If the CV of variety I is 30% and variety II is 25% then Variety II is more consistent.
6. The probability of a sure event is One.
7. Poisson distribution is a distribution for rare events.
8. A population consisting of an unlimited number of units is called an infinite population.
9. Large sample test can be applied when the sample size exceeds 30.
10. Student t- test is applicable in case of small samples.

Q.2 Do as Directed.

A. Match group A with group B. (Each of 0.50 marks) **(05)**

A	B
1) Regression line of X on Y	a) $r \times \frac{\sigma_x}{\sigma_y}$
2) b_{xy}	b) $r \times \frac{\sigma_y}{\sigma_x}$
3) Regression line of Y on X	c) ${}^{n}C_{r}\, p^{r} q^{n-r}$
4) b_{yx}	d) $(X - \bar{X}) = b_{xy}(Y - \bar{Y})$
5) P(r)	e) $(Y - \bar{Y}) = b_{yx}(X - \bar{X})$
6) Mean	f) $-1 \leq r \leq 1$
7) Limits of coefficient of correlation	g) $\frac{\sum fx}{\sum f}$
8) Median	h) $0 \leq P(A) \leq 1$
9) Mode	i) Positional average
10) Limits of probability	j) Data item with the maximum frequency.

B. Define the following. (Any ten) **(05)**

1. Statistics
2. Average
3. Dispersion
4. Random Experiment
5. Sample Space
6. Probability(Statistical definition)
7. Statistical hypothesis
8. Population
9. Correlation
10. Treatments
11. Experiment
12. Replication

C. Answer the following. (Any ten) **(10)**

1. What is the standard deviation of the five numbers, 5, 5, 5, 5, 5?
2. Can Mean be a negative number?
3. What is the formula for determining class width from a given data?
4. What is the relation between mean, median and mode?
5. What is the relation between coefficient of correlation and the regression coefficient?

6. It is given that $b_{xy} = 2$ and $b_{yx} = 5$. Is this possible?
7. The given ten pairs of values for the variables X and Y satisfy the equation $y=2x+3$. What type of correlation exists between X and Y?
8. What is the probability of a certain event?
9. What is the probability of an impossible event?
10. What is the shape of the curve of the normal distribution?
11. How many parameters are there for a Poisson distribution?
12. How many parameters are there for a Binomial Distribution?

Q.3 Write short notes. (Any five) **(10)**

1. Limitations of Statistics.
2. Merits of Diagram.
2. Advantages of RBD.
3. Advantages and Disadvantages of LSD.
5. Advantages of Factorial Experiment.
6. Assumptions in Correlation analysis.

Q.4 Differentiate the following. (Any five) **(05)**

1. Primary Data and Secondary Data.
1. Population and Sample.
4. Simple hypothesis and Composite hypothesis.
5. Finite population and infinite population.
6. Independent Events and Mutually Exclusive Events.
7. Independent Events and Dependent Events.
8. Negative correlation and perfectly negative correlation.