GIET UNIVERSITY, GUNUPUR – 765022

RJ19BSCAG500

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FIRST YEAR EXAMINATION-JULY 2019

AS-111

STATISTICAL METHODS

Time : 2 Hours Maximum : 50 Marks

(Answer **all** questions of Section – A)

SECTION – A

Q.1. Fill-up the blanks 10x0.5=5

i. The set of all possible outcomes of a random experiment is called _____.
ii. The maximum probability of occurrence of an event is _____
iii. The probability of obtaining a total of 8 in a single throw of two dice is _____.
iv. In a binomial distribution of b(n,p), the mean is 1.25 times the variance. If Variance is 3.2 and p=0.2, than n = _____.
v. For a moderate asymmetrical distribution, relation of Mean, Median and Mode is _____.
vi. Type _____ error is more dangerous than Type _____ error.
vii. To compare two small sample means, _____ test is applicable.
viii. Yate's correction for continuity is required when expected frequency is less than _____.
ix. The direction of correlation of two variables is known from the _____.
x. The yield(Y) of rice depends on the length of panicle(X). If r_{yx} = 0.85, σ_X = 3.6 and σ_Y=2.5, then the regression coefficient of Y on X is _____.

Q.2. Multiple choice(choose the most correct answer) 10x0.5=5

a) A study based on complete enumeration is known as: a) sample survey, b) pilot survey, c) census survey, d) none of the these.
b) A frequency distribution can be: a) discrete, b) continuous, c) either (a) or (b), d) none of these.
c) If A and B are two events, the probability of occurrence of A and B independently is denoted as: a) P(A)+P(B) b) P(A∪B) c) P(A∩B) d) P(A).P(B) .
d) In a binomial trial, n=14, p= 0.2. Then mean of the distribution is: a) 2.0 b) 2.24 c) 2.80 d) none of the these.
e) If X and Y are two variates, there can be at most : a) one regression line b) two regression lines c) three regression lines d) any number of regression lines.
f) Analysis of variance utilizes: a)Z-test b) F-test c) χ^2 - test d) t-test.
g) One of the principles of experimental design is:a) Observations are independent b) Observations are normal c) Constant variance d) Randomization.
h) Regression coefficient of Y on X is : a) b_{xy} b) b_{yx} c) r_{yx} d) None of these.
i) Randomised Complete Block Desin is a classification of: a) one-way b) two-way c) three-way d) none of these.
j) After and before effect can be tested by : a) Z- test b) F- test c) t- test d)Paired t-test.

Q.3. Match the followings (Write the letter of Column-A in the ( ) of Column-B

Column-A	Column-B
a. Cumulative frequency	i. $\mu = \mu_0$
b. Data	ii. $(\sigma/\mu) \times 100$
c. Primary data	iii. Alternative hypothesis
d. Relation of mean and variance of Poisson variate	iv. Standard deviation
e. H_1	v. Probability of Type-II error
f. Null hypothesis of t-test	vi. Systematically adding the frequencies
g. σ	vii. r
h. Coefficient of Variation	viii. First time collected observations
i. Simple correlation coefficient	ix. Mean=Variance
j. β	x. Facts and figures

Q.4. Define/Explain in 1-2 sentences 5x1=5

a) Define statistics
b) Explain Scatter diagram
c) Explain dispersion
d) Explain level of significance
e) Explain Null Hypothesis

SECTION – B

(Attempt any **five** questions.Each question carries equal marks) 5x6=30

Q.5. Answer the followings.

a) What is meant by measures of central tendency? List the prerequisites of an ideal average. Give the formula to compute mean for the discrete and continuous frequency distribution table data.
b) In a sample survey, the no. of farmers were observed with respect to application of fertilizer on different farm sizes as:

	Small farmers	Big farmers
No fertilizer :	50	40
Fertilizer	30	60

Test whether the use of fertilizer depends on the farm sizes or not.

Q.6. The percentage germination of mung seeds from five sources each with different sample size was observed as:

Sources of seed	Percentage germination of seeds	Sample size Frequency(f)
A	5-15	9
B	15-25	21
C	25-35	40
D	35-45	22
E	45-55	8
		100

Compute Arithmetic Mean, Geometric Mean and Harmonic Mean of germination of seeds and verify the relation of AM≥ GM≥ HM.

Q.7. Answer the followings.

a). Write the application of statistics in agriculture.

b) The equations of two regression lines are :

$3x + 12y = 19$ and $3y + 9x = 46$

Obtain : i).Value of correlation coefficient of x and y. and ii).Mean of x and y.

Q.8. Answer the followings.

a). What is dispersion? List the different measures of dispersion. Justify the best measure of dispersion.

b). Compute the mean deviation from mean for the following data on net profit from adoption of composite fish culture in 100 farms.

Q.9. Answer the followings.

a). What is test of significance? Write the different steps.

b). Two types of animal feeds were used on 5 and 7 pigs for reducing their body weight. The decrease in weight after using the feeds for 6 months was as follows :

Feed A : 10 12 13 11 14

Feed B : 8 9 12 14 15 10 9

Test whether there is any difference in the animal feeds on reducing the body weight of pigs?

(Given $t = 2.223$ at 10 d.f. with $P = 0.05$)

Q.10. Four types of poultry feed were examined in gaining body weight of poultry birds. The experiment was conducted in a Completely Randomised Design and the body weight gain (in kg) of birds observed is given below.

Feed-1	Feed-2	Feed-3	Feed-4
1.9	1.0	1.2	1.8
1.8	1.1	1.4	1.5
1.4	1.3	1.1	1.4
1.7	1.2	1.3	1.7

a) Construct the ANOVA table after analysis.

b) Determine whether the poultry feeds differ in gaining the body weight of birds.

Given the table value of $F(=3.49)$ at $\alpha = 0.05$