T. Y. B. Sc. (Biotechnology) SEM – V (CBCS - 2015 COURSE) :
SUMMER - 2019
SUBJECT: BIOSTATISTICS

Day: Wednesday
Date: 03/04/2019

Time: 10.00 AM TO 01.00 PM
Max. Marks : 60

S-2019-1384

N.B. :

1) **Q. No. 1** and **Q. No. 5** are **COMPULSORY**. Out of the remaining, attempt **ANY TWO** questions from each section.
2) Figures to the **RIGHT** indicate **FULL** marks.
3) Answer to both the sections should be written in SAME answer books.
4) Draw neat **DIAGRAM** wherever necessary.
5) Use of non programmable calculator is **ALLOWED**.

SECTION - I

Q.1 Solve: **(10)**

a) If $n = 7, p = 0.7$, calculate values of $P(r = 3)$, in Binomial experiment.

b) $A = \{w, e, r, f, g, h\}$, $B = \{e, f, g, x, y, z\}$
Find $A \cup B$, $A^c \cap B^c$, and $(A \cap B)^c$

c) Draw a Venn diagram to show that $\sigma(A \cup B) = \sigma(A) + \sigma(B) - \sigma(A \cap B)$

d) Draw a ***Pie Diagram*** to show that a family spends ***Rs.5000*** on entertainment ***Rs 5000*** on food, ***Rs.10000*** on house rent an ***Rs.10000*** on education out of its total income of ***Rs.30000*** per month.

e) Define sample with one example.

Q.2 State the formulae for computation of: **(10)**

a) Covariance

b) Coefficient of Correlation

c) Rank Correlation

d) Mean of Binomial Distribution

e) Variance of Binomial Distribution

Q.3 Following ANOVA table is incomplete. Complete it: **(10)**

Source of Variation	df	SS	MSS	F - value
Blocks	4-1=3	4.25	?	?
Treat	5-1=5	98.35	?	?
Error	?	?	?	
Total	24-1=23	123.45		

P.T.O.

Q.4 Compute the correlation coefficient (r), regression coefficient (b) and intercept using following data. **(10)**

Height cm.	148	149	150	151	152	153	154	155	156	157
Body Weight kg.	52.5	53.2	56.8	59.3	60.5	62.7	63.5	63.9	64	64.2

Draw a scatter diagram and write the linear equation of height on weight of the graph along with r-value. Also estimate height if weight is 65 kg.

SECTION – II

Q.5 Write short notes on: **(Any Two)** **(10)**

a) Comparison of two independent means using t – test
b) Z – test for comparison of a sample mean with a given mean
c) Words: Parameter and Static in the context of statistics
d) Measures of dispersion

Q.6 Draw a Pie Chart: **(10)**

a) A standing crop in an agricultural field has following distribution of Attacks: VIRUS: 25% , INSECT and PEST : 35%, Rest are all healthy. (No plant belongs to both virus and insect attach at the same time).

b) State the steps to use 'ADD TREND LINE' tool on a spread sheet for curve fitting.

Q.7 **a)** State the steps required adding 'Analysis Tool Pack' to your spread sheet? Explain how the tool pack can be used for statistical analysis? **(05)**

b) Explain how ADD TRENDLINE tool on spread sheet can effectively used for non linear regression. **(05)**

Q.8 Here is the ***Status*** of plots in a Field experiment in Entomoloty. **(10)**

X	X	X	Y	Y	Y	Y	Y	X	X
Z	X	Z	Z	Z	Y	Z	X	X	X
Z	Z	Y	Z	Y	U	Y	U	Y	Z
Z	Z	Z	Z	Y	Y	Y	Y	X	X

Here, each cell in above plan is a 3m ×3m. plot. The letters X,Y,Z and U denote the level of infection in the plot X = (***High Infection***, Y = ***(Medium infection)***, Z = ***Low Infection*** of ***Known Virus*** and U = ***Unknown Infection***.

Answer the following:

a) Total No of Plots (N)

b) What is the frequency of Plots with ***Unknown Infection***?

c) What is the probability of ***High*** infection?

d) What is the probability of {***Unknown*** or ***law***} infection.

e) Draw a Histogram to show the frequencies (OR a simple Bar chart will do)

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