

**M. Sc. (Medical Biotechnology) Sem-III (Choice Based Credit System)**  
**: SUMMER - 2019**

**SUBJECT : BIOSTATISTICS**

Day : Friday  
Date : 12/04/2019

**S-2019-1511**

Time : 02.00 PM TO 05.00 PM  
Max. Marks : 60.

**N.B.:**

- 1) Q. No. 1 and Q. No. 5 are **COMPULSORY**.
- 2) Attempt any **TWO** questions from Q. No. 2, 3 & 4 and any **TWO** questions from Q. No. 6, 7 & 8.
- 3) All questions carry **EQUAL** marks.
- 4) Answers to both the sections should be written in '**SAME**' answer books.
- 5) Use of calculator is **ALLOWED**.

**SECTION-I**

**Q.1** Discuss various types of sampling methods with few illustrations. (10)

**Q.2** Define the terms phenotypic and genotypic which are used as adjectives while specifying variabilities and correlations in Biometrics. Elaborate applications. (10)

**Q.3** Complete the ANOVA, using the following information: (10)

Design RBD  
Drugs used in Trial 10  
No. of Blocks : 5  
Variate : Rate of change in BMI  
Total SS : 475.3  
Sum of squares (Drugs) : 375.3  
Block sum of squares : 65.0

Computed F value should be accurate upto 2 decimals. Assume table value of F : 2.75. Test hypothesis using F-Test.

**Q.4** Find the correlation coefficient (r), Regression coefficient (b) and Intercept (c) for the following data: (10)

x (Age-days)	6	7	8	9	10	11	12
y (height of plant in cm)	10	11.1	12	13.5	15	16	17

Use the results to determine whether the growth is linear from 6<sup>th</sup> day to 12<sup>th</sup> day. Find predicted height on 13<sup>th</sup> day.

**SECTION-II**

**Q.5** Discuss the following concept (Any **TWO**): (10)

- a) Scatter diagram
- b) Randomization
- c) Exponential growth.

**P.T.O.**

**Q.6** Following data contains, results of an HIV. Survey conducted at a Hospital. (10)

	Rural	Semi URBAN	URBAN
HIV +ve	6	7	12
HIV -ve	17	21	27
Not tested	7	12	11

Use Chi-square test to determine the association between region and prevalence of HIV. Chi-square Table value : 3df- 2.365, 4df- 3.356.

**Q.7** Write short notes on any **TWO** of the following: (10)

- a) T-tests and Z-tests
- b) Covariance
- c) Trend line fitting using Spreadsheets.

**Q.8** A patient who is under physiotherapy showed following Anthropometric measurements (Angle between index finger and middle finger). (10)

Days	7	14	21	28	35	42	49	56	63
Angle	3	4	4	6	10	15	25	31	32

Draw a Scatter-Diagrams and argue that the improvement in movement follows a logistic curve.

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