

**M. Sc. (Medical Biotechnology) Sem-III (Choice Based Credit System)**  
**: WINTER - 2018**  
**SUBJECT : BIOSTATISTICS**

Day : Thursday  
Date : 01/11/2018

**W-2018-1302**

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

**N.B.:**

- 1) **Q.No. 1 and Q.No. 5 are COMPULSORY.** Out of the remaining questions attempt **ANY TWO** questions from each section.
- 2) Answers to both the sections should be written in **SEPARATE** answer books.
- 3) Figures to the right indicate **FULL** marks.

**SECTION – I**

**Q.1** Draw neat scatter diagrams to show positive correlation (height and weight), [10]  
negative correlation (temperature and humidity). Comment on how linear regression analysis can help.

**Q.2** Some column headings, and data entries are missing in the following frequency [10]  
table.

Color Attribute	Frequency	-----?	----?	Cumulative Relative frequency
Bright RED	12	12	0.12	0.12
Moderate RED	----?	25	0.13	0.25
Reddish	27	52	---?	0.52
Pinkish	23	---?	0.23	----?
Whitish	---?	100	---?	1.00

- a) What is the frequency of Moderate RED?
- b) What is the frequency of Whitish?
- c) What is the relative frequency of Whitish?
- d) What is the relative frequency of Reddish?
- e) What is the sample size (N=)?

**Q.3** Describe the following concepts in detail: [10]  
a) Range as a Measure of dispersion  
b) Nominal variable  
c) Sample and sampling  
d) Continuous variable

**Q.4** Define the types of error and explain meaning of the terms level of significance, [10]  
power of a test.

**SECTION – II**

**Q.5** Find Mean, Mode and Median of the following data: [10]

1	2	3	4	4	4	3	2	1	1
2	3	3	4	4	5	3	3	3	3
3	3	3	3	4	2	2	2	2	3

Explain the significance of measures of dispersion in medical informatics.

**P.T.O.**

- Q.6

Write short notes on:

[10]
- a)

Binomial Distribution
- b)

Non parametric tests
- c)

Hypothesis

- Q.7

Match the entries form column A with column B

[10]

Column A	Column B
Parameter	Comparison of Means
Level of significance	Sample
F – statistics	Example of a growth curve
Z – test	Probability of Type 1 Error
Chi-square test	Population
Regression coefficient	Difference of Max and Min
Statistic	Ratio of Variance
Exponential	Contingency table
Range	Measure of central tendency
Geometric Mean	Slope of the line

- Q.8

Following ANOVA table is from a clinical experiment. Complete the ANOVA and answer the questions that follow:

[10]

Source of variation	df	Ss	Ms	F
Between groups	5	?	?	?
Within groups	?	54	?	
Total	23	254		

- a)

Fill in missing values.
- b)

What is the number of treatments?
- c)

What is the number of replications?
- d)

If table value of F is 2.77, will you reject the hypothesis?

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