

Shree Manibhai Virani and Smt. Navalben Virani Science College (Autonomous). Rajkot
Affiliated to Saurashtra University, Rajkot

SEMESTER END EXAMINATION NOVEMBER – 2017

B.Voc. Medical Laboratory & Molecular Diagnostic Technology

GMLMDT 3.5 - INTRODUCTION TO BIOINFORMATICS AND BIOSTATISTICS

Duration of Exam – 2.30 hrs

Semester – III

Max. Marks – 70

Que. - 1 Answer the following Questions

[20]

1. What is the primary data
2. Define dependent events?
3. Explain Types of error in statistical analysis
4. Give the example of chronological classification
5. Write down the name of father of Bioinformatics
6. The process of drawing a sample from a population is known as?
7. Define range?
8. Calculate the arithmetic mean from the given data: 10, 7, 6, 7, 3, 2, 2, 5, 4, 6, 5.
9. Calculate the mean of the given value: 17, 5, 80, 20, 15, 20, 9, 2.
10. What percentage of the level of significance is generally taken as by default?
11. What is the difference descriptive and inferential statistics?
12. The mean blood pressure of a group of patients is compared in 3 groups of the patients after the administration of different dosages of beta-blocker. Write down the suitable statistical test?
13. The effect of lowering blood pressure of a medicine in female and male are to be compared. Write down the name of suitable statistical test?
14. Write down the types of ANOVA.
15. A fair dice is tossed, find the probability that an even number is obtained
16. What are various ways of searching sequences from biological databases?
17. Define accession number.
18. Write down the full form of EMBL.
19. Write down the example of secondary Database
20. Write down the url of NCBI

Que. – 2 (A) Answer the following Questions (Any Three)

[06]

1. Define Null hypothesis
2. Write down the basic difference between Statistic and Parameter.
3. What is level of significance
4. Explain the concept of degree of freedom.
5. Write down the database retrieval tools.
6. What do you mean by biological database? Explain in detail

Que. – 2 (B) Answer the following Questions (Any Three)**[09]**

1. Define primary data and its methods of collection.
2. Explain the geographical representation of data with suitable examples.
3. Calculate the standard deviation of given data 2000, 5000, 4200, 4500, 5000
4. Calculate the mean of given data

Salary (in)	3000	4000	4200	4500
Frequency	5	8	10	2

5. Calculate the median of the given values 90, 85, 89, 92, 87, 87, 90, 95, 87, 88
6. Test the goodness of fit with the Mendelian ratio 9:3:3:1. ($\chi^2_{0.05, 3}=7.82$)

Tall and red	Tall and white color	Dwarf & red color	Dwarf & White color
95	29	30	6

Que. – 2 (C) Answer the following Questions (Any Two)**[10]**

1. Write down the steps to for test statistics
2. A group of 5 childrens were given normal food while the second groups of children of the same age groups were given food plus nutritional supplement. After 1 year the gain in weight (in kg.) was noted. The noted weight in both groups is given below (Apply unpaired T test to find out significant differences between means of two groups at the 5% level of significance.) $t_{0.05, 8} = 2.10$

A	5	3	4	3	2
B	1	3	2	4	2

3. From the data given below, find out whether the means of the three samples differ significantly or not. $F_{0.05, 3, 12} = 3.89$.

Group A	Group B	Group C
40	29	13
10	13	12
15	17	10
17	12	15
16	9	5

4. Discuss OMICS technology and its application
5. What do you mean by BLAST? Write down its types and application

Que. – 3 (A) Answer the following Questions (Any Three)**[06]**

1. Write down the formulas of mean, median and mode of un-grouped data.
2. Write down the names of submission tools of major biological databases.
3. Calculate the degree of freedom, if there is 20 students in a class
4. On rolling a single die, the probability of getting 1 will be?
5. What is a regression analysis?
6. Write down the formula of standard deviation for ungrouped data.

Que. – 3 (B) Answer the following Questions (Any Three)

[09]

1. Explain the measure of central tendency, write down its merits and demerits.
2. Classify biological databases with example.
3. Samples of drug products are stored in their original containers under normal conditions and sampled periodically to analyze the content of the medication. Determine slope and intercept by least square method.

Time (Months)	3	6	9	12	15
Content (Mg)	990	986	970	960	952

4. What is correlation? Write down its types?
5. The weights of 5 ear-heads of sorghum are 100,102,118,124 and 126 grams. Find the standard deviation.
6. Discuss Bar diagram and also mention its merits and demerits.

Que. – 3 (C) Answer the following Questions (Any Two)

[10]

1. What do you mean by measures of variance? Explain its major types
2. Write down the major file format used in bioinformatics
3. 10 students were given intensive coaching in biostatistics. The score obtained before and after coaching are given as below. Does the score have significant difference between before and after coaching. Test at 5% level of significance. ($T_{9,0.05}=1.833$)

Marks Before Caching	40	62	53	60	65	67	48	69	72	80
Marks After Coaching	55	74	65	59	60	60	49	82	74	86

4. What do you mean by Bioinformatics? Write down its application in different areas of life science?
5. What is drug? Discuss the drug discovery process in detail.
