M.Sc. BOTANY
FOURTH SEMESTER
BIOSTATISTICS, COMPUTER APPLICATION & BIOINFORMATICS
MSB – 401

(Use Separate Answer Scripts for Objective & Descriptive)

Duration: 3 hrs. **Full Marks: 70**

(PART-A: Objective)

Time: 20 min. **Marks: 20**

Choose the correct answer from the following: ***1X20=20***

1. Margaret Dayhoff developed the first protein sequence database called
   a. SWISS PROT
   b. PDB
   c. Atlas of protein sequence and structure
   d. Protein sequence databank

2. Each record in a databse is called an
   a. entry
   b. file
   c. record
   d. Ticket

3. Literature database include
   a. MEDLINE and PubMED
   b. MEDLINE and PDB
   c. PubMED and PDB
   d. MEDLINE and PDS

4. Which of the following is a protein sequence database
   a. DDBJ
   b. EMBL
   c. GenBank
   d. NCBI

5. BLAST programme is used in
   a. DNA sequencing
   b. Amino acid sequencing
   c. DNA barcoding
   d. Bioinformatics

6. GenBank, the nucleic acid sequence database is maintained by
   a. Brookhaven laboratory
   b. European Mlecular Biology laboratory (EMBL)
   c. DNA database of Japan (DDBJ)
   d. National Centre for Biotechnology Information (NCBI)

7. CPU of a computer consists of
   a. ALU and Memory
   b. Control Unit and Memory
   c. ALU and Control Unit
   d. All of these

8. DEMUX is also called
   a. Data selector
   b. Data distributor
   c. Both (i) and (ii)
   d. None

9. In 8:1 MUX, the number of select lines are
   a. 2
   b. 2
   c. 4
   d. 1

10 Th 2's compliment of the binary number 10110101 is
a. 10110001
b. 00111010
c. 01001010
d. 01001011

11. The computer language which converts high level language into machine language is called
a. Assembler
b. Compiler
c. ALU
d. None

12. The binary equivalent of the $(15)_{10}$ is
a. 1011
b. 1100
c. 1111
d. 1110

13. How many NAND gates are required to construct an OR gate?
a. 2
b. 3
c. 4
d. 5

14. Which of the following is the best measure of dispersion?
a. range
b. mean deviation
c. standard deviation
d. none

15. The measure _____ is effected by the extreme values.
a. mean
b. median
c. mode
d. none

16. Which of the following statement(s) is (are) true for the relative measures of dispersion
a. Relative measures of dispersion have no unit
b. Relative measures of dispersion are expressed in percentages.
c. Relative measures of dispersion are expressed in ratios
d. All of the above.

17. Which of the following name of the personality is associated with Analysis of variation (ANOVA)?
a. Karl Pearson
b. R. A. Fisher
c. Spearman
d. none

18. In a non-random sampling
a. The probability of selection of each unit in the population is equal
b. The probability of selection of each unit in the population is different.
c. The selection of the units for the sample are based on judgement
d. none

19. Null hypothesis is not rejected at a certain level of significance, if
a. the value of the test statistic is greater than the critical value.
b. the value of the test statistic is less than or equal to the critical value.
c. the value of the test statistic is not equal to the critical value
d. none of the above

20. F-test is used
    a. to test the equality of two variances
    b. to test the equality of the two population means.
    c. to test the equality of two population proportions
    c. none of the above

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PART-B : Descriptive

Time : 2 hrs. 40 min. **Marks : 50**

[Answer question no.1 & any four (4) from the rest]

1. Discuss the features, advantages and disadvantages of generation of computer **10**

2. Write about (a) BLAST and (b) FASTA **5+5=10**

3. Write the steps in constructing and analysis a Phylogenetic tree **10**

4. a. What do you mean by MUX? Design the logic circuit of 4:1 MUX with the help of truth table. **6+4=10**

   b. Substract (15)10 from (9)10 in 2's compliment method

5. Write short notes on the following **5+5=10**
   a. Architecture of computer
   b. Demultiplexer

6. Calculate mean, median, mode and coefficient of variation from the following distribution. **2+2+2+4 =10**

Class:	15 – 25	25 – 35	35 – 45	45 – 55	55- 65	65 – 75
No. of observations :	3	10	18	13	4	2

7. The mean height of 500 students is 151 cm and the standard deviation is 15 cm. Assuming that the heights are normally distributed, find how many students' heights lie between 120 cm and 155 cm. [Given, the area between Z = 0 and Z = 2.07 is 0.4808 and the area between Z = 0 and Z = 0.27 is 0.1064 **5+5=10**

8. Define null hypothesis and alternative hypothesis. What is testing of hypothesis? Explain one-tailed test and two-tailed test. Write the steps in conducting the testing of hypothesis. **2+1+2+5 =10**

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