

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

- Which generation of computer uses ULSI technology?
a. Second
b. Third
c. Fourth
d. Fifth
- Which of the following was the first commercial computer developed in the year 1951?
a. ENIAC
b. EDVAC
c. EDSAC
d. UNIVAC
- Which of the following is not a part of an optical mouse?
a. LED
b. DSP
c. Optical sensor
d. CCD
- Which of the following device is not a media input device?
a. Microphone
b. Webcam
c. Digital Camera
d. Graphics tablet
- Which of the following is not an output device?
a. Scanner
b. Plotter
c. Printer
d. Speaker
- WWW stands for:
a. World Wide Web
b. Wide World Web
c. Web Wide World
d. None of the above
- Which of the following are components of Central Processing Unit (CPU)?
a. Arithmetic logic unit, Mouse.
b. Arithmetic logic unit, Control unit.
c. Arithmetic logic unit, Integrated Circuits.
d. Control Unit, Monitor.
- Which of the following relationship is true in a multimodal distribution?
a. Mean-mode = 3(mean-median)
b. Mode= 3median - 2mean
c. 3median =(2mean + mode)
d. All of the above
- A binomial distribution may be approximated by a Poisson distribution provided:
a. n is small and p is large
b. n is large and p is small
c. n is large and p is large
d. n is small and p is small
- The standard deviation of the binomial distribution is:
a. np
b. \sqrt{np}
c. npq
d. \sqrt{npq}

11. All normal distributions are:
 - a. Bell - shaped
 - b. Symmetrical
 - c. Defined by its parameters μ and σ
 - d. All of the above
12. If b_{xy} is negative, then b_{yx} is:
 - a. Negative
 - b. Positive
 - c. Zero
 - d. None of the above
13. If $P(A \cap B) = 0.20$ and $P(B) = 0.8$, then $P(A/B)$ is:
 - a. 0.25
 - b. 0.4
 - c. 0.5
 - d. 0.75
14. If mean and coefficient of variation of a set of data is 10 and 5, respectively, then the standard deviation is:
 - a. 10
 - b. 50
 - c. 5
 - d. none of the above
15. The procedure of aligning many sequences simultaneously is called:
 - a. Multiple sequence alignment
 - b. Pairwise sequence alignment
 - c. Global sequence alignment
 - d. Local sequence alignment
16. Information of all known nucleotide and protein sequences are available on:
 - a. EMBL
 - b. DDBT
 - c. NCBI's Gene Bank
 - d. All of these
17. BLAST X program is used for:
 - a. Translate protein sequence
 - b. Translate DNA database
 - c. Translate input sequence
 - d. None of these
18. Literature databases include:
 - a. MEDLINE and PubMed
 - b. MEDLINE and PDB
 - c. PubMed and PDB
 - d. MEDLINE and PDS
19. GeneBank and SWISSPORT are example of:
 - a. Primary database
 - b. Secondary database
 - c. Composite database
 - d. None of these
20. Phylogenetic relationship can be shown by:
 - a. Dendrogram
 - b. Gene Bank
 - c. Data retrieving tool
 - d. Data search tool

(PART-B : Descriptive)

Time : 2 hrs. 40 min.

Marks : 50

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

1. What is a Computer? Give Block Diagram and also explain the 3rd & 5th generation of Computer. 10
2. What is Operating System? What are the different types of Operating System? Explain in details. 4+6=10
3. What is bioinformatics? Discuss briefly about the different biological databases used in bioinformatics. 2+8=10
4. What is homology modeling? Discuss the steps involved in the process of homology modeling. 2+8=10
5. a. What are the desirable properties for arithmetic mean? 3+7=10
 b. What is correlation? Given the following information about advertising expenditure and sales:

	Advertisement(X) (Rs. in lakh)	Sales(Y) (Rs. in lakh)
Arithmetic mean, \bar{x}	10	90
Standard deviation, σ	3	12

Correlation coefficient = 0.8

Obtain the two regression equations.
6. a. What are the chief properties of normal distribution? 5+5=10
 b. The incidence of occupational disease in an industry is such that the workers have 20 percent chance of suffering from it. What is the probability that out of six workers 4 or more will come in contact of the disease?
7. What is sequence alignment? Describe briefly the various types of sequence alignment. 2+8=10
8. Write short notes: (any two) 5+5=10
 - a. Phylogenetic tree.
 - b. NCBI
 - c. BLAST

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