(7 pages)

Reg. No. : ....

Code No.: 5825   Sub. Code: WBOE 23

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2024

Second Semester

Botany – Elective

RESEARCH METHODOLOGY, COMPUTER
APPLICATIONS AND BIOINFORMATICS

(For those who joined in July 2023 onwards)

Time : Three hours   Maximum : 75 marks

PART A — (15 × 1 = 15 marks)

Answer ALL questions.

Choose the correct answer :

1. While writing manuscripts, often use the abbreviation "et.al.". It means

    (a) extra alternate

    (b) and alternatively

    (c) at the end

    (d) and others

2. What is the purpose of the "Conclusion" section in a research report?

    (a) Detailing the research methodology

    (b) Discussing the limitations of the study

    (c) Acknowledging the individuals who contributed to the study

    (d) Summarizing the study and presenting the key findings

3. In research reporting, the "Discussion" section is focused on

    (a) Interpreting the results and comparing them to existing literature

    (b) Presenting the raw data and figures

    (c) Describing the research methods used in the study

    (d) Summarizing the study's objectives

4. The sample introduction in HPLC is carried by

    (a) Micropipette

    (b) Densitometer

    (c) Platinum iridium capillary

    (d) Goniometer

5. What is the purpose of centrifugation?

    (a) To separate particles of different densities

    (b) To purify a solution

    (c) To measure the pH of a solution

    (d) To mix two solutions together

6. The polymerase chain reaction is

    (a) a DNA sequencing technique

    (b) a DNA degradation technique

    (c) a DNA amplification technique

    (d) All of the above

7. Which of the following is not application software?

    (a) Windows 7   (b) WordPad

    (c) Photoshop   (d) MS-excel

8. Which of the following is system software?

    (a) Operating system   (b) Compiler

    (c) Utilities   (d) All of the above

9. Which of the following is an Internet browser?

    (a) Windows explorer

    (b) www.google.com

    (c) Internet Explorer

    (d) Task bar

10. GenBank, the nucleic acid sequence database is maintained by

    (a) Brookhaven laboratory

    (b) DDBJ

    (c) EMBL

    (d) NCBI

11. Find the correct match

    (a) Composite database–GenBank

    (b) Secondary database–DDBJ

    (c) Secondary database–Protein Data Bank

    (d) Protein database–EMBL

12. Which of the following is incorrect about ENTREZ?

    (a) It is a resource prepared only by the staff of the NCBI.

    (b) It provides a series of forms that can be filled out to retrieve a Medline reference related to the molecular biology sequence databases

    (c) One straightforward way to access the sequence databases is through ENTREZ

    (d) It provides a series of forms that can be filled out to retrieve a DNA or protein sequence

13. Which of the following is a sequence alignment tool?

   (a) BLAST   (b) PRINT

   (c) PROSITE   (d) PIR

14. Which of These Following are not Bioinformatics Applications?

   (a) Data storage and management

   (b) Understand the relationships between organisms

   (c) Drug designing

   (d) None of the above

15. Which of the following is untrue regarding BLAST and FASTA?

   (a) FASTA is faster than BLAST

   (b) FASTA is the most accurate

   (c) BLAST has limited choices of databases

   (d) FASTA is more sensitive for DNA-DNA comparisons

PART B — (5 × 4 = 20 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

16. (a) Write the difference between short communication, review paper and original research paper.

Or

   (b) Explain the different types of research.

17. (a) Summarize the applications of TLC.

Or

   (b) Describe the instrumentation of agarose gel electrophoresis.

18. (a) Explain the classification of computers.

Or

   (b) Distinguish between WWW and Internet.

19. (a) Summarize the applications of bioinformatics.

Or

   (b) Summarize the uses of nucleotide databases.

20. (a) Enumerate various gene-finding tools using in bioinformatics.

Or

   (b) Summarize the applications of BLAST.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

21. (a) Describe the structure of science thesis.

Or

   (b) Explain the

     (i) bibliography and

     (ii) citation and its style.

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22. (a) Describe the instrumentation and applications of GLC.

Or

(b) Explain

(i) High-speed centrifuges

(ii) Ultracentrifuges

23. (a) Describe the computer parts and their functions:

Or

(b) Discuss about internet browsers with its functions and types.

24. (a) Describe the (i) Genbank and (ii) PDB

Or

(b) How to perform biological database searching – Discuss.

25. (a) Discuss briefly about nucleotide sequence, databases.

Or

(b) Describe the pairwise sequence alignment.

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