B.Sc. BIOTECHNOLOGY
Fifth Semester
COMPUTER APPLICATION AND BIOINFORMATICS
(BBT - 23)

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

Part-A (Objective) =20
Part-B (Descriptive) =50

(PART-B: Descriptive)

Duration: 2 hrs. 40 mins. **Marks: 50**

Answer any *four* from *Question no.* 2 to 8
***Question no.* 1 is compulsory.**

1. Define system and application software. Describe the organization of different components of a digital computer with a schematic diagram. (2+8=10)
2. What do you mean by main memory and secondary memory in a computer? Convert the following binary number to decimal and decimal number to binary number: (5+5=10)
   i) 110101
   ii) 432
3. What is meant by editing a document in MS-Word? What are the differences between editing and formatting a document? Write a note on headers and footers options. (2+5+3=10)
4. Answer the following: (2+3+5=10)
   a) Define nucleotide.
   b) Draw the phosphodiester bond of deoxyribonucleic acids.
   c) Explain super secondary structure of a protein? Give example.

5. Define sequence alignment. How one can calculate the score, identity percentage and similarity percentage in a pair wise sequence alignment event? Explain with examples. (2+8=10)
6. What do you mean by biological databases? Explain different types of biological databases with examples. (2+8=10)
7. What kinds of data are stored in 'pfam' and 'Prosite' databases? What are the file types in 'Prosite' database? Write down the applications of 'Prosite' database. (2+3+5=10)
8. Write short notes on the following: (5+5=10)
   a) File formats in bioinformatics.
   b) Applications of bioinformatics in Genome biology.

*****

B.Sc. BIOTECHNOLOGY
Fifth Semester
COMPUTER APPLICATION AND BIOINFORMATICS
(BBT - 23)

Duration: 20 minutes **Marks – 20**

(PART A - Objective Type)

I. Tick the correct answer: **1×20=20**

1. Supercomputers are primarily useful for
   a) Input-output intensive processing
   b) Mathematical intensive scientific applications
   c) Data retrieval operations
   d) None of these

2. Which of the following holds the ROM, CPU, RAM and expansion cards?
   a) Hard disk b) Floppy disk
   c) Mother board d) None

3. Add, subtract, divide, multiply and logic operations are performed by
   a) Registers b) Control unit
   c) ALU d) None

4. In MS-Word, a document can be zoomed maximum upto
   a) 100% b) 150% c) 200% d) 500%

5. Word text can be made italic by
   a) Ctrl+I b) Ctrl+B c) Ctrl+U d) None

6. In the print preview, the word document can be edited in
   a) Normal view b) Web layout view
   c) Outline view d) All

7. In Excel the intersection of a row and column is called
   a) Square b) Cell
   c) Cubicle d) Worksheet

8. The combination of the column letter and row number for a cell in an Excel worksheet is called a
   a) Cell cross b) Cell identification number
   c) Cell reference d) Cell identity

9. In MS-Excel, formulas are made up of
   a) Arithmetic operators such as =+- and other functions
   b) Only arithmetic operators
   c) Only functions
   d) None

10. The default page orientation in Excel is
    a) Landscape b) Portrait
    c) Horizontal d) None

11. Which of the following menu has the background?
    a) Format b) View
    c) Insert d) Slide show

12. Which extension is given to PowerPoint document by default?
    a) .EXT b) .COM c) .PPT d) None

13. Which of the following is not a hydrophobic, aromatic amino acid?
    a) Tyr b) Cys c) Trp d) Phe

14. The torsion angle present in C_{∞}-C bond in a polypeptide is known as
    a) Psi b) Phi c) Both a & b d) None

15. Which of the following is not a non covalent interaction in proteins?
    a) Electrostatic forces b) Hydrogen bonds
    c) Hydrophobic forces d) Disulfide bonds

16. Which of the following database is used for biochemical pathway analysis?
    a) KEGG b) EMBL c) NCBI d) PDB

17. BLASTx program is used for
    a) Translate protein sequence b) Translate DNA database
    c) Translate input sequence d) None of these

18. SCOP is
    a) It is primary database.
    b) It is nucleotide sequence database.
    c) SCOP database is a hierarchical classification of protein 2D domain structures.
    d) Structural database, which identify structural and evolutionary relationships.

19. PDB is
    a) Primary database for macromolecules.
    b) Can be determined by gel electrophoresis.
    c) Composite database.
    d) Database for three dimensional structure of biological macromolecule.

20. Which is data retrieving tool?
    a) ENTREZ b) EMBL c) PHD d) All

*****