SEAT No._____

[96]

**SARDAR PATEL UNIVERSITY EXAMINATION**

DAY -Thursday   DATE -31/12/2020 TIME: 2:00- 4:00 P.M.   Course: US03CBNF21

SUBJECT: Basics in Bioinformatics   CLASS- S.Y.B.Sc SEMESTER-III

**MAX. MARKS- 70**

**Q1- Select the correct from the following Multiple Choice: [1 X 10]**                    **[10]**

(i)   Which one of the following is a primary protein database?
      a) SWISS PROT          b) EMBL          c) DDBJ                    d) NCBI

(ii)  Who is the pioneer in Bioinformatics?
      a) PaulienHogeweg.    B) Margaret Dayhoff    c) Robert Ledley.    D) David W MounT.

(iii) FASTA format starts with _____ symbol.
      a)  /            b) *              c) >              d) #

(iv)  Entrez, a life science search engine used to search across databases is maintained by _____.
      a) SWISS-PROT.      b) EMBL.          c) DDBJ.          d) NCBI

(v)   PDB is
      a) Primary database for nucleotides    b) can be determined by gel electrophoresis
      c) composite database
      d) database for three dimensional structure of biological macromolecule

(vi)  Database which store information about references and abstracts on life sciences and
      biomedical research is
      a) Pubmed          b) Entrez          c) PMC                    d) OMIM

(vii) The database that store information about classification of protein structure is...
      a)  PubMed      b) PDB              c) OMIM                    d) SCOP

(viii) 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

(ix)  The digital number system has base and radix of
      a)6                b) 10            c) 2              d) 9

(x)   (16) $_8$ in hexadecimal number system is equal to
      a) A              b) C              c) E              d) F

**Q2- Fill in the blanks and True –False   (1X8)**                                        **[8]**
(i)    ...................................is a nucleotide sequence database.
(ii)   ...................................is a search engine.
(iii)  Softwares which are available free for a specific trail period are called .............................
(iv)   ................................... is a secondary database.
(v)    In PDB format HETATM heading include information about inhibitors.    [TRUE/FALSE]
(vi)   Prosite is a database of protein families and domains.                [TRUE/FALSE]
(vii)  Flat file system uses SQL for querying and maintaining the database.    [TRUE/FALSE]
(viii) In wet labs computers are used to carry out analysis, modeling and simulations. [TRUE/FALSE]

**Q3- Short Answer Questions ( Attempt any 10 out of 12)   (10X2)**                    **[20]**

(i)     Name any 2 websites and 2 softwares for bioinformatics.

(ii)    Define data mining and its importance.

(iii)   Differentiate between primary and secondary database.

(iv)    Give the important features of relational database management system.

(v)     Expand for following Abbreviation:       NCBI, SCOP, EMBL,  PDB.

(vi)    Define Algorithm and its importance.

(vii)   How PubMed differ from PubMed Central.

(viii)  Explain Fasta format.

(ix)    Discuss the main characteristics of SWISS-PROT database.

(x)     Differentiate hardware from software.

(xi)    Draw a block diagram of a Computer.

(xii)   Convert $(1000)_2$ to $(?)_{10}$

**Q4- Long Answer Questions (attempt any 4 out of 8)  (4X8)**                    **[32]**

(i)     Define Bioinformatics? Discuss its different field, scope and limitation.

(ii)    What are shareware softwares and how it differ from Freeware  software.

(iii)   Explain the format of Genbank databank in detail.

(iv)    Discuss in detail about National Centre for Biotechnology Information (NCBI) data model.

(v)     Explain with an example about structural classification of database.

(vi)    Describe different type of memory and characteristic features of computer.

(vii)   Write a note on search engine.

(viii)  Solve the following conversions:

        a) $(724)_2 = (?)_{10}$        b) $(ABC)_{16} = (?)_{10}$        c) $(10AF)_{16} = (?)_2$     d)$(11101010)_2 = (?)_{10}$

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[2]