BIOINFORMATICS AND COMPUTER APPLICATIONS IN BIOLOGY

SUB CODE: 16SACBS2

2marks :

1). Computer :

computer can be defined as "An electronic and electromechanical device". It intakes raw data, manipulates it can give accurate output in the form of information. A computer processess data in a device called that control processing unit (CPU).

2) characteristics of computer :

- Speed
- Accuracy
- Diligence
- Versatility
- Power of remembering
- NO- IQ
- No fellings
- Storage.

3) I-P-O cycle :

computer is an electronic device which converts data into information.

The Convertion takes place in set sequence of the multiple step is called as IPO cycle.

4) Hardware and Software:

Hardware refers to the physical elements of a computer. This is also sometime called the machinery or the equipment of computer. Software commonly known as programs or apps consist of all the instructions that tell the hardware, however to performing a task.

5) Operating system (OS):

An operating system is system software that manages computer hardware and software and the software resources programs. operating system are found on many devices that contain a computer from cellular phones, video games convolves to web servers.

6) Internet:

The internet [contraction of inter connected network] is the global system of interconnected computer networks that

use the internet Protocol suite [TCP/IP] to link devices world wide.

7) History of Internet :

One of the most common mis conception about the internet is that it is a recent development. It has in fact been around in different forms. Since the data 1960's. ARPANET was originally designed by the U.S Department.

8) Uses of Internet :

- Communication
- Information and sharing knowledge
- Have to pay someone : use online modes
- Social networking
- Digital maps with directions
- Groceries : order online
- checking results through Internet.

9) E-mail and Voice mail :

An e-mail address is a unique

identifier for an email account. It is used to both sent and receive e-mail messages over the internet. A voice mail system is a computer based system that allows users and subscribers to exchange Personal voice message.

10) Internet service Providers:

An internet service provider (ISP), also sometimes referred to as an internet access provider [IAP] is a company that offers its customers that accesing through the Internet.

11) Bio-informatics:

Bio-informatics is the use of computers for the acquisition, management and analysis or biological information. It is conceptualising biology in terms of molecul and applying "information techniques".

12) History of Bio-informatics:

Paulien Hogeweg and Ben Hesper introduced the term in 1978 to refer to "the study of information processes in biotic systems". This definition place bio-informatics as a field Parallel to biophysics or biochemistry.

13) Development of Bio-informatics:

Biology is the middle of a major Paradigm shift driven by computer technology. Although it is already an informational in saience of any aspects. These are method of biological concepts.

14) Scope of Bio-informatics:

Bio-informatics is the application of computer technology to get the information that's stored in certain types of biological data. It Provides central, globally accessible databases.

15) Applications of Bio-informatics:

Development of new algorithms and statistics, which to access relationships among members of large data sets, such as methods to locate a gene within a sequence, or function and cluster of Protein sequence.

16) Biological database:

A biological database is a collection of biological data that is organized, so that is content can easily be accessed managed and update.

17) NCBI :

The National centre for Biotechnology information (NCBI) is part of the united States National library of medicine (NLM) a branch of the National institutes of health (NIH). The NCBI is located in Bethesda, mayland and was founded in 1988.

18) EMBL:

EMBL represented as European Molecular Biology Laboratory. It is also called as Nucleic acid database. It gives the sequence of DNA. Data have been collected in the calloboration with Genbank and the DNA Database of Japan (DDBJ).

19) GenBank:

GenBank is a DNA sequence database.

It is an USA database devised by the National center for Biotechnology Information (NCBI). It contains the data collected from all over the world. It contains DNA sequence of each and every organism.

20) BLAST & FASTA:

BLAST is basic local alignment search tool. It is maintained by NCBI. FASTA is similar to BLAST but it is faster than BLAST and hence it is called as the FASTA.

21) RASMOL:

RasMol is a computer program written for molecular graphics visualization intended and used mainly to depict and explore the biological macromolecule structures in Protein data

22) CATH:

The CATH protein structure classification database is a free, Publicaly available onl resource that Provides information on the evolutionary relationships of Protein domains.

23) Structure of Protein :

Protein structure is the three-dimensional arrangement of atoms in an amino acid-chain molecule. Proteins are Polymers - Specifically Polypeptides - formed from sequence of amino acids, the monomers of the polymer.

24) Protein :

Proteins are essential nutrients for the human body. They are one of the building blocks of body tissue can also serve as a fuel source. It provide as much energy density as carbohydrates : 4 kcal Per gram.

25) Protein Visualization Tools :

The Software used to examine and display structure information of biomolecules like amino acids and Protein are called as structure visualization tools. Eg : PyMoL, RasMoL, Ribbons, Swiss - PDB viewer, etc.,