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**SARDAR PATEL UNIVERSITY EXAMINATION**  
**DATE - 13/06/22, Monday TIME: 12:00- 02:00 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 search engine?  
 a) PDB                      b) EMBL                      c) PUBMED                      d) ENTREZ
- (ii) The identification of drugs through genomic study is  
 a) Genomics                      b) Cheminformatics  
 c) Pharmacogenomics                      d) Transcriptomics
- (iii) The field that uses computer science in solving biological problem is  
 a) Biotechnology      b) Bioinformatics      c) Genetics      d) Microbiology
- (iv) Entrez, a life science search engine is maintained by \_\_\_\_\_.  
 a) SWISS-PROT.      b) EMBL.      c) DDBJ.      d) NCBI
- (v) Which format of sequence starts with ">" sign  
 a)Fasta                      b) Fastq                      c) GCG                      d) VCF
- (vi) Database which stores information about references and abstracts on life sciences and biomedical research is  
 a) Pubmed                      b) Entrez                      c) PDB                      d) OMIM
- (vii) Which database was created by National institute of genetics, Japan?  
 a)EMBL                      b) TrEMBL                      c) GENBANK                      d) DDBJ
- (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) Which of the following is not a programming language?  
 a)Python                      b) C++                      c) Perl                      d) C++
- (x) Decimal value 12, in hexadecimal number system is equal to  
 a) A                      b) C                      c) B                      d) F

**Q2- Fill in the blanks and True –False (1X8) [8]**

- (i) .....and .....are bioinformatics databases.
- (ii) .....is a search engine in bioinformatics.
- (iii) "Free trial and then buy" term is used for .....software.
- (iv) Flat file database is a type of database that stores data in a single table. [TRUE/FALSE]
- (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) Binary system consists of two values 1 and 2. [TRUE/FALSE]
- (viii) In dry lab 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 databases and its importance.
- (iii) Enlist different fields of bioinformatics.
- (iv) Give the important features of relational database management system.
- (v) Expand for following Abbreviations: NCBI, SCOP, EMBL, PDB.
- (vi) Diagrammatically explain the basic organization of computer.
- (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 is shareware software and how it differ from freeware software.
- (iii) Explain the format of GenBank or EMBL database.
- (iv) Discuss in detail about National Centre for Biotechnology Information (NCBI) data model.
- (v) Explain databases, its types and importance.
- (vi) Explain computer with its important features.
- (vii) Write a note on CATH and SCOP Database in detail.
- (viii) Solve the following conversions:
  - a)  $(75)_{10} = (?)_2$
  - b)  $(11101010)_2 = (?)_{10}$

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