BRAINWARE UNIVERSITY

Term End Examination 2023-2024
Programme – B.Sc.(BT)-Hons-2020/B.Sc.(BT)-Hons-2021
Course Name – Genomics and Proteomics
Course Code - BBTC602
(Semester VI)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Name the phenomenon which shows the lack of correlation in genome size and genetic complexity.

a) Histogram b) Karyogram
c) Dendrogram d) C-value paradox

(ii) A character or trait is the direct function of

a) Gene b) RNA
c) Protein d) rRNA

(iii) Exons are

a) Non coding regions of genome b) Coding regions of genome
c) Repetitive regions of genome d) All of these

(iv) C-value in genome represents_____

a) Genetic disorders b) Phenotypic variation
c) Amount of DNA present in the genome d) Qualitative traits

(v) Sanger used which of the following chemical to sequence a DNA molecule?

a) ddNTP b) dNTP
c) Base modifiers d) Base analogues

(vi) Which of the following is incorrect regarding gene ontology?

a) It exists because there is a need to standardize protein functional descriptions b) It uses a limited vocabulary to describe molecular functions
c) Biological processes are not described though d) The cellular components are described using limited vocabulary

(vii) Every protein in its native state has a unique three dimensional structure which is referred to as its_____

a) Configuration b) Conformation
c) Spatial arrangement of domains d) None of these

(viii) How many orders are possible for a conventional protein folding?

a) 1 b) 2
c) 3 d) 4

(ix) Which of the following statements is true about proteins?

a) Proteins are made up of amino acids. b) Proteins are essential for the development of skin, teeth and bones.
c) Protein is the only nutrient that can build, repair and maintain body tissues. d) All of these

(x) Bioinformatics involves

a) Artificial intelligence b) Only knowledge of Biochemistry
c) Zoological knowledge d) All of these

(xi) Coregenes is a web-based program that determines a _____ set of genes based on comparison of _____ small genomes.

a) vast, four b) core, fifteen
c) core, four d) vast, fifteen

(xii) Ensembl has the accession to annote mainly

a) Ptimate genome b) Vertibrate genome
c) Human genome d) Mammals genome

(xiii) Which of the following is an example of Homology and similarity tool?

a) BLAST b) RasMol
c) EMBOSS d) PROSPECT

(xiv) Which of the following tools is used for the identification of motifs?

a) BLAST b) COPIA
c) PROSPECT d) Pattern hunter

(xv) What is the deposition of cDNA into the inert structure called?

a) DNA probes b) DNA polymerase
c) DNA microarrays d) DNA fingerprinting

Group-B

(Short Answer Type Questions) 3 x 5=15

2. What do you mean by extra chromosomal gene? Give examples. (3)
3. What is an intron? Is it a 'Junk' gene? State reasons. (3)
4. Develop the outline to identify a protein using MALDI-TOF based MS analysis. (3)
5. Identify various steps involved in SAGE. (3)
6. Write a short illustration on ENSEMBLE browser. (3)

OR

Explain the usage of VISTA in short. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Develop the experiment design of MALDI-TOF based MS analysis to identify a protein. (5)
8. Determine the scope of Pairwise alignment. (5)
9. Outline the critical account on Genome sequencing. (5)
10. You are provided with two sequences with same function, one normal and one diseased. Determine the roadmap for the comparative structural analysis of the sequences. (5)
11. Write down the importance of microarray for gene expression. (5)
12. Explain the principle of gel filtration chromatography and briefly explain the term 'Void Volume'. (5)

OR

Explain about isoelectric focusing and 2D PAGE in detail. (5)

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