



17723

LIBRARY
Brainware University
Barasat, Kolkata -700125



BRAINWARE UNIVERSITY

Term End Examination 2024-2025

Programme – M.Sc.(BT)-2024

Course Name – Genomics and Proteomics

Course Code - MBT20205

(Semester II)

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) The Genome constitutes

- a) Total gene pool of an organism
- c) Only DNA of a diploid cell

- b) Total mRNA of an organism
- d) Only proteins

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

- a) Histogram
- c) Dendrogram

- b) Karyogram
- d) C-value paradox

(iii) Introns are

- a) Non coding regions of genome
- c) Repetitive regions of genome

- b) Coding regions of genome
- d) All of these

(iv) Eukaryotic genome contains

- a) Mitochondrial DNA
- c) Both of these

- b) Only nuclear DNA
- d) None of these

(v) Human Genome sequencing project was performed using

- a) Sanger sequencing
- c) MALDI-TOF

- b) Maxam-Gilbert sequencing
- d) ESI-MS

(vi) Identify the incorrect statement about gene annotation.

- a) The gene annotation of the human genome employs a combination of theoretical prediction and experimental verification

- b) Gene structures are first predicted by ab initio exon prediction programs

- c) The predicted genes are compared with experimentally determined cDNA and EST sequences
- d) The pairwise alignment programs are not involved
- (vii) Identify the platform to submit a new protein sequence.
- a) NCBI
- b) SWISSPROT
- c) EMBL
- d) DDBJ
- (viii) Model of alpha helix was proposed by _____
- a) Watson
- b) Linus Pauling
- c) Krebs
- d) Moorey
- (ix) Choose the high protein content food.
- a) Tofu and eggs
- b) Grains and legumes
- c) Milk and milk products
- d) All of these
- (x) A linear polymer of more than fifty amino acid residues is referred to as a _____
- a) dipeptide
- b) oligopeptide
- c) polypeptide
- d) peptide
- (xi) Select the matrix used in MALDI-TOF.
- a) Alpha hydro-Glycolic acid
- b) 3,5-dimethoxy-4-hydroxycinnamic acid
- c) Benzoic acid
- d) 4,5,6 trimethoxy-4-hydroxycinnamic acid
- (xii) Infer for what matrix is used
- a) high spatial resolution lipid imaging
- b) Detection of high-weight molecules like proteins that are larger than 5000 daltons
- c) detection of oligonucleotides and phosphorylated peptides
- d) All of these
- (xiii) Select the mass analyzer that is used frequently with MALDI.
- a) Magnetic sector
- b) Quadrupole
- c) Ion trap
- d) TOF
- (xiv) Select the ionization technique that uses a short laser pulse to achieve ionization.
- a) ESI
- b) Chemical Ionization
- c) FAB
- d) MALDI
- (xv) Analyze which of the following ionization method uses aromatic compounds and organic solvents to achieve ionization?
- a) ESI
- b) Chemical Ionization
- c) FAB
- d) MALDI

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Differentiate between gene and genome. (3)
3. State the difference in organization of eukaryotic and prokaryotic genome. (3)
4. Choose two common sources of proteins for industrial use? Explain why pH stability is important for industrial enzymes? (3)
5. Explain the different methods of transcriptome analysis. (3)
6. Evaluate the use of Genome browsers in bioinformatics. (3)

OR

Summarize the process for protein based drug designing. (3)

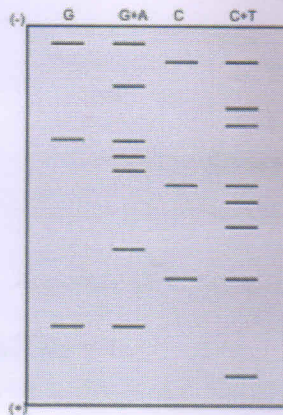
Group-C

(Long Answer Type Questions)

5 x 6=30

7. The Chemical-cleavage method of sequencing, uses separate lanes for A+G and G only and C+T and C only. Explain with proper reason. (5)
8. Interpret the need to fractionate proteins. How does it helps in proteomics. (5)
9. Categorize the major sources of proteins used in industrial and medical applications? Discuss their significance. (5)

10. In a Maxam-Gilbert sequencing process, the following data obtained. Using the data, construct the Nucleotide sequence. (5)
[5]



11. Discuss the significance of molecular markers in forensic science and paternity testing. (5)
12. Discuss the industrial applications of proteins and their significance in biotechnology. (5)

OR

- Describe the different protein engineering strategies used to improve protein function. (5)

LIBRARY
Brainware University
Barasat, Kolkata -700125