

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2023
(Second Semester)

Branch – BIOTECHNOLOGY

OMICS TECHNOLOGY

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

1. Small cDNA sequence that represents a unique segment of an active gene is called _____
(i) SNP (ii) sRNA (iii) EST (iv) Contigs
2. Which of the following gene have been introduced into transgenic Fish?
(i) E. coli gene for β -galactosidase
(ii) Human or rat gene for growth hormone
(iii) Chicken gene for delta crystalline protein
(iv) All of the above
3. Which of these concerns would apply to functional protein microarrays but not antibody microarrays?
(i) Three dimensional structure of a protein is essential for correct function, and the process of microarray preparation may interfere with this structure
(ii) Certain functions, such as structural support of a cell, may not be amenable to analysis on a microarray
(iii) All of these apply to functional protein microarrays but not antibody microarrays
(iv) All of these apply equally to both types of microarrays
4. Which can be used to detect *in vivo* DNA-protein interaction?
(i) ChIP and ChIP-seq (ii) Immunoprecipitation
(iii) Foot printing (iv) EMSA
5. There exist three types of interactions between domains. Which of the following is not one of them?
(i) Stable complex (ii) Transient interaction
(iii) Multi-domain protein (iv) Unstable interaction

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

- 6 a) Compare BacMap and HapMap.
OR
b) Explain the role of pseudogenes and duplication of genes.
- 7 a) Analyze the genome editing technique – RNAi.
OR
b) Justify the task in bone marrow engraftment testing in DNA Polymorphism.
- 8 a) Discuss the Tissue Microarray and its significance.
OR
b) State the procedure for Y2H in detecting protein- protein interaction.

Cont...

- 9 a) Evaluate the use of reporter gene GFP to visualize proteins in live culture.
OR
b) Illustrate Post translational modifications of proteins.
10. a) Outline the function of BioGRID database in Interactomics.
OR
b) Give an account of functioning of PINV - Protein Interaction Network Visualizer.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 6 = 30)

11. a) Discuss in detail the organization and Structure of Eukaryotic Genome.
OR
b) Compare RFLP and RAPD methods.
12. a) Describe in detail on the Transcriptome analysis.
OR
b) Illustrate the studies on human microbial pathogens using *C. elegans*, as model systems.
13. a) Sketch the procedure for Peptide mass fingerprinting.
OR
b) Enumerate in detail about IPAQ.
14. a) Explain library based analysis screening for large-scale analysis of protein.
OR
b) Explain the significance and role of Metagenomics in modern biotechnology.
15. a) Explore the computational methods used in Text mining for PPIs.
OR
b) Discuss in detail about the experimental and computational methods to map / study interactomes.

Z-Z-Z

END