

SECTION-A (10 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Telomeric regions are known for (i) mutations (ii) cell division (iii) pseudogenes (iv) repeats	K1	CO1
	2	RFLP, RAPD, VNTR and SNP are used to study (i) DNA polymorphisms (ii) disease (iii) chromosome organization (iv) PTM	K2	CO1
2	3	The Human Microbiome Project was approached in how many phases? (i) one (ii) two (iii) three (iv) four	K1	CO2
	4	Which of the following platform is second generation sequencing technology? (i) Sanger (ii) Illumina (iii) Oxford NanoPore (iv) PacBio	K2	CO2
3	5	Surface Plasmon Resonance is a gold standard for detecting (i) kinetics (ii) polymorphisms (iii) pathogenicity (iv) molecular weight	K1	CO3
	6	iTRAQ & TMT are used for _____ of proteins (i) degradation (ii) staining (iii) quantification (iv) detection	K2	CO3
4	7	The method for the detection of protein-protein interactions is (i) Y1H system (ii) Y2H system (iii) Phage display (iv) All of the above	K1	CO4
	8	Algorithms for proteomics include (i) MASCOT (ii) ORFFinder (iii) BLAST (iv) DDBJ	K2	CO4
5	9	A high-throughput, miniature tool designed to analyze protein interactions, functions, and expression levels (i) MS/MS (ii) Protein microarray (iii) 2D PAGE (iv) None of the above	K1	CO5
	10	The MS technique that uses tagged bait protein to pull down interacting prey proteins is (i) Affinity Purification-MS (ii) MALDITOF (iii) CoFrac-MS (iv) XL-MS	K2	CO5

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Module No.	Question No.	Question	K Level	CO
1	11.a.	Compare and contrast the features of prokaryotic and eukaryotic genome organization.	K2	CO1
		(OR)		
	11.b.	Outline the characteristic features and significance of the human Y chromosome.		
2	12.a.	Explain the strategy behind the bacterial quorum sensing and biofilm formation.	K3	CO2
		(OR)		
	12.b.	How can Bone marrow engraftment be tested using DNA polymorphism?		
3	13.a.	What is the importance of Surface Plasmon Resonance (SPR) in structural proteomics?	K4	CO3
		(OR)		
	13.b.	Compare Mass Spectrometry and MALDI-TOF with illustrations.		
4	14.a.	Explain the detection of post-translational modifications using gel electrophoresis based techniques.	K5	CO4
		(OR)		
	14.b.	Based on the principles, recommend Metabolomics and Metagenomics applications in research.		
5	15.a.	Discuss the features of BioGRID and IntAct databases.	K6	CO5
		(OR)		
	15.b.	Discuss briefly the objectives and accomplishments of IndiGen Genome Project.		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Summarize different techniques for studying chromosome conformation.	K2	CO1
2	17	What are the different model systems available for performing research on human microbial pathogens?	K3	CO2
3	18	Distinguish 1D and 2D gel electrophoresis in terms of principle, methodology and applications.	K4	CO3
4	19	Explain the experimental and computational methods for studying functional proteomics.	K5	CO4
5	20	Compile the principles and methodologies of different NGS platforms.	K6	CO5

Z-Z-Z

END