

6. (a) How do phage display and yeast-two-hybrid studies test for protein-protein interactions ? **10**
- (b) Explore and assess the significance of DNA microarray technology in protein expression analysis. **10**

#### Unit IV

7. What do you understand by term pharmacogenomics ? Discuss its significance in personalized medicine and healthcare. **20**
8. Explain briefly : **2×10=20**
- (a) Comparative genomics
- (b) Genomic studies for identification of gene targets.

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**M. Sc. EXAMINATION, May 2017**

(Third Semester)

(Re-appear Only)

BIOTECHNOLOGY

BT-601-MS

Genomics and Proteomics-I

*Time : 3 Hours]*

*[Maximum Marks : 100*

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Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

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**Note :** Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

## Unit I

1. (a) How are genes and other sequence features arranged in a typical prokaryotic genome ? How is the genomic arrangement different in eukaryotic genomes ? **12**  
(b) With the help of neat and labelled diagrams explain in detail the packaging of the eukaryotic genetic material. **8**
2. (a) Elaborate the differences between a genetic and a physical map, describing the advantages and disadvantages of each. How are restriction enzymes used to generate both genetic and physical maps of a genome ? **12**  
(b) Discuss, how fluorescent in situ hybridization (FISH) technique can be used to map genome locations even if there is no genetic variation present at a given position ? **8**

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## Unit II

3. Compare shotgun sequencing method with the clone contig method of genome sequencing. Discuss, how both these methods have been used in the sequencing of the human genome. Give all the major landmarks of the Human Genome Project” in a chronological order. **20**
4. (a) How is the bioinformatics approach used for locating genes in a genome sequence ? **10**  
(b) Describe the various gene inactivation and overexpression techniques used for functional analysis of genes. **10**

## Unit III

5. (a) How can small differences in protein levels be quantitated by two-dimensional gel electrophoresis ? **10**  
(b) Discuss the role of mass spectrometry in protein structural and functional studies. **10**

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P.T.O.