

Sardar Patel University
MSc Integrated Biotechnology Examination - Semester 8
PS08CIGI/MB3: Omics
Saturday 25th April, 2015
2:30 pm to 5:30 pm

Note:

Total Marks: 70

1. Figures to the right indicate marks.
2. Draw neat and labelled diagram, wherever necessary.

Q.1 Multiple choice questions

[08]

- 1 In automated fluorescent sequencing _____ number of fluorescent tags are used
a) one b) two c) three d) four
- 2 Following is not true for ORF
a) can be translated in six frames b) covered between start and stop codon
c) nucleotides present in ORF are in multiple of three d) always uninterrupted
- 3 For human genome project _____ sample was collected from donors.
a) somatic cells b) Stem cells c) sperm d) fibroblasts
- 4 Which of this describes a contig
a) a complete genomic library including overlapping clones
b) a complete mRNA library
c) a chromosome specific library
d) none of these
- 5 The complete set of proteins at a given time present in a cell is known as
a) proteomic b) proteins c) proteome d) none of these
- 6 Following is not true in Isoelectric focussing
a) proteins separated based on net charge b) IPG strips are used
c) proteins migrated toward both the electrodes
d) Urea and thiourea used as chaotrophic agent
- 7 Microarray is extension of the _____ technique.
a) Western blot b) Southern blot c) PCR d) 2D gel
- 8 The branch of genomics deals with genetic mapping and sequencing of whole genome is _____
a) functional genomics b) comparative genomics
c) computational genomics d) structural genomics

Q.2 Attempt any seven

[14]

- 1 What is C value paradox?
- 2 Describe principle of pyro sequencing.
- 3 What is chromosome walking?
- 4 Briefly describe radiation hybrid maps.
- 5 Role of chaotrophic agents in 2D gel electrophoresis.
- 6 Write principle of ionization in ESI.
- 7 What is phage display library?
- 8 Briefly describe probe immobilization chemistry on microarray chip

9 What are metabolic networks?

Q.3 A Write a detailed account on Sanger sequencing method. [06]

B What is genetic code? Compare the gene structure of prokaryote and eukaryote. [06]

OR

B What is massively parallel sequencing? Enlist various NGS platforms and describe Illumina in detail. [06]

Q.4 A What is shotgun sequencing? Describe the importance of whole genome shotgun sequencing approach in human genome project. [06]

B Enlist various physical mapping techniques used in human genome project. Briefly describe the principles of any two. [06]

OR

B Narrate clone by clone sequencing approach used in HGP. [06]

Q.5 A Write a short note on yeast two hybrid system. [06]

B Describe the principle of MALDI-TOF. [06]

OR

B Enlist various protein visualization techniques. Describe types of organic dyes used for protein visualization. [06]

Q.6 A Define transcriptomics. Describe the principle of SAGE used to determine transcriptomics. [06]

B What is metabolomics? Write a note on importance of studying metabolomics and give overview of Human metabolome project. [06]

OR

B Give comparative account on oligonucleotide and in situ fabricated microarray. [06]

—X—