[A-17/A-19] SEAT No._____ No. of Printed Pages : 2

Sardar Patel University

MSc Integrated Biotechnology Examination -Semester 8

PS08CIGI/MB3: Omics

Monday 17th April, 2017

10:00 am to 1:00 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 Most introns starts with _____ and ends with _____ pair of nucleotide in RNA,serve as site to identify intron-exon boundaries.
a) AG - GU b) GU - AG c) AG -GT d) GT - AG

2 Following is not true for pyro sequencing.
a) ddNTPs added to all the reaction mixture
b) Pyro phosphate produce proportional signal
c) luciferase is present in beads
d) it falls under category sequencing with synthesis

3 Which of these genetic markers is most likely to be highly polymorphic (have many different alleles)?
a) An RFLP b)A microsatellite c)An SNP d)All of these are equally polymorphic

4 Which of these is a key characteristic of a molecular marker?
a)It is a known gene.
b)It is located at a known site on the chromosome.
c)It is only useful for linkage and physical mapping studies.
d)None of these

5 In isoelectric focusing, proteins are separated on the basis of their_____
a) relative content of positively charged residue only
b) relative content of negatively charged residue only
c) size
d) relative content of positively and negatively charged residue

6 _____ is NOT the method used for protein-protein interaction study.
a) Far- western analysis b) Solid-phase ELISA
c) Yeast 2-hybrid system d) yeast 1-hybrid system

7 _____ is used for metabolome analysis.
a) GC b) LC-MS-MS c) UV VIS Spectrophotometer d) HPLC

8 _____ is used to construct cDNA probe for transcriptome analysis.
a) PCR b) RT-PCR c) SAGE d) DD-PCR

Q.2 **Attempt any Seven** [14]

1 What is ORF? How to find the ORF in the DNA sequence?

2 What is cDNA? Why cDNA synthesis is required?

3 Why *C. elegans* was selected as a model organism?

4 The goals of human genome project.

5 Narrate the role of components of rehydration buffer in IEF gel.

6 Write principle of ionization in ESI.

7 What is phage display library?

8 Briefly describe probe immobilization chemistry on microarray chip.

9 What is differential gene expression analysis.

Q.3 A What is C-value paradox? Give detailed account on Cot curve analysis to study the complexity of DNA. [06]

B What is genetic code? what is codon bias? Give detail account on codon bias and its benifits. [06]

OR

B What is the next generation sequencing? Enlist various NGS platforms and explain any one in detail. [06]

Q.4 A Narrate the strategy adopted in initial phase of the human genome sequencing project. [06]

B Write a detailed note on restriction mapping. [06]

OR

B Enlist types of maps representing genome. Describe the importance of SSR markers in aligning various maps. [06]

Q.5 A Give significance of study of protein-protein interaction. Explain yeast-two-hybrid system. [06]

B Explain MALDI-TOF in detail. [06]

OR

B Write a detailed note on 2D gel electrophoresis. [06]

Q.6 A Define transcriptomics. Enlist techniques use to study transcriptomics. Describe the principle of SAGE. [06]

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

OR

B Schematically present steps of DNA microarray. Write a note on DNA microarray data analysis. [06]

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