Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.SC.(H)(BT/GE/MICRO/MOL)/SEM-5/DPB-501/2011-12

2011

DNA TYPING PROTEOMICS & BEYOND

Time Allotted : 3 Hours Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :

10 × 1 = 10

i) The full complement of RNA molecules produced by the genome is known as

a) Genome b) Proteome

c) Transcriptome d) DNA.

ii) Protein chips contains

a) proteins that recognize proteins

b) artificial recognition site for protein

c) broad specificity capture agent

d) all of these.

iii) Proteomics is used for

a) protein structure analysis

b) sequence alignment

c) analysis of (a) and (b) both

d) none of these.

iv) In microsatellites repeat units are

a) 1–2 bp b) 1–13 bp

c) 20–30 bp d) 14–24 bp.

v) Conventional linkage maps are used for

a) quantitative traits mapping

b) quick and easy process

c) none of these

d) both (a) and (b).

vi) VNTR analysis

a) relatively large amounts of DNA are needed

b) take several weeks

c) variation in the intensities of bands may create difficulties in interpretation

d) all of these.

vii) To identify the location of labelled protein techniques used is

a) *X*-ray tomography b) FRET

c) SPR d) Chromatography.

viii) DNA quantity in the sample is determined by absorbance at

a) 260 nm b) 280 nm

c) 460 nm d) 520 nm.

ix) All mitochondrial genomes analyzed to date are

a) circular b) linear

c) < 50 kb in size d) none of these.

x) Analyser used in Tandem mass can be

a) TOF b) magnetic analyzer

c) quadrupole d) all of these.

xi) Genome markers

a) must occur as multiple alleles

b) must be repeat DNA sequences

c) can be any unique DNA sequence

d) are only used in genetic maps.

xii) Microsatellites are

a) frequently found in bacterial genomes

b) always smaller than 50 bp

c) used as DNA markers

d) repeated sequences.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Write a note on Application of DNA profiling in Y chromosome analysis.
3. Differenciate DNA Micro arrays with protein micro arrays.
4. Explain Yeast two hybrid system analysis.
5. Write down the application of Mass spectrometry in SNP's analysis.
6. What is Microsatellite ? Why is it a more reliable genetic marker than other satellite DNA in DNA fingerprinting ? 2 + 3

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. Define Molecular Marker. Briefly describe the preparation of AFLP map, its application, advantages and limitations. What is *mi*-RNA ? 3 + 10 + 2
8. What is Metabolome ? Write down the different metabolomic pathways with example. What are the tools are used to protein micro array data analysis ? 2 + 8 + 5
9. What is Mass spectroscopy ? What is the different method of MS analysis ? What are the advantages of MALDI-TOF ? 3 + 7 + 5
10. a) What is protein interaction ?
    b) What are the different approaches of protein-protein interaction ? Give examples.
    c) What are the different methods are used for the analysis of protein-protein interaction ?
11. a) What is Linkage disequilibrium ?
    b) What are the factors that effect LD ?
    c) From the scientific data revealed co-relate Alzheimer's disease and SNP.
    d) What is Biomarkers ? Write two examples of application of it. 2 + 3 + 5 + 2 + 3