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SARDAR PATEL UNIVERSITY

M.Sc (II semester) Examinations

Saturday, 25th April, 2015

2.30 pm to 5.30 pm

Paper: PS02CBIT03-Genetic Engineering and Bioinformatics

Total marks: 70

1. Choose the most appropriate answer:

(8x1 = 8 marks)

- i) Which of the following type of vector would be most suitable for introducing DNA into a animal cell?
(a) Plasmid (b) YAC vector (c) Ti plasmid (d) Adenovirus
- ii) In a PCR amplification extension of the primers start from
a) 5'ends c) 3'ends
b) both 5'and 3'ends d) 5'end of forward and 3'end of reverse primers
- iii) Terminal deoxynucleotidyl transferases are used for
a) joining two DNA molecules
b) Transferring a phosphate moiety to the 5'end of nucleotides
c) End labeling of DNA
d) Transferring a OH to the 3'end of nucleotides
- iv. A _____ is essential for immunochemical screening of recombinant clones.
a) labelled antibody c) Labelled DNA probe
b) Labelled antigen d) Fluorescent label
- v. Which of these is a database
a) MMDB c) VAST
b) SPDBV d) ProtParam
- vi) PAM250 is
a) alignment tool b) database
c) educational resource d) scoring matrix
- vii) Find odd one out
a) Dot plot c) FASTA
b) Jmol d)EMBOSS
- viii. PHYLIP is used for
a) Gene prediction b) phylogenetic analysis
c) sequence assembly d) structure prediction

2. Write briefly on any seven:

(7x2=14 marks)

- a) Role of Phenol in DNA isolation
- b) Alkaline phosphatase
- c) Phagemids
- d) Dideoxynucleotides
- e) Threshold cycle
- f) E value
- g) Drop off score
- h) *Ab initio*
- i) paralogs

Answer the following:

(4x12= 48 marks)

3. a) Outline the principle involved in plasmid isolation by alkali lysis
b) Describe the principle and uses of Southern hybridization

OR

- b) Write notes on
 - i) DNA ligase
 - ii) Type III restriction endonucleases

4. a) Write on the principle and advantages of DNA sequencing by chain termination
b) Explain the properties and uses of RAPD markers

OR

- b) Mention the tools of IPR. Write briefly on patenting.

5. a) List various databases and discuss PDB.
b) Explain three steps in sequence alignment

OR

- b) Write a note on Genbank.

6. a) Discuss secondary structure prediction.
b) Write a note on CATH.

OR

- b) Write a note on VAST

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