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SARDAR PATEL UNIVERSITY

M.Sc (II semester) Examinations

Thursday, 7th April, 2016

10.30 am to 1.30 pm

Paper: PS02CIBT03-Genetic Engineering and Bioinformatics

No. Of Printed Pages: 2

Total marks: 70

1. Choose the most appropriate answer:

(8x1 = 8 marks)

- i) Physical methods are used to break plant cell walls for DNA isolation since, the plant cell walls are
- a) Complex in composition c) require a mixture of hydrolytic enzymes
b) Contain many layers d) all of the above
- ii) A thionucleotide is used to improve site directed mutagenesis since it
- a) allows the restriction enzymes to cleave the mutant DNA strand
b) it protects the mutant DNA strand from being cleaved by a restriction enzyme
c) it enhances the binding of DNA polymerase
d) it reduces the non specific binding of primer
- iii) Expression of which of the following reporter genes do not require the addition of specific substrate for detection?
- a) GFP b) Luciferase c) β galactosidase d) β glucuronidase
- iv. A novel drug molecule is to be protected under Intellectual Property Rights. Which of the following tools will be appropriate?
recombinant clones.
- a) Trade mark b) Patent c) Copy right d) Trade secret
- v. ProtParam is a
- a) viewing software c) analytical tool
b) modelling software d) alignment tool
- vi. Which of these is a homolog?
- a) Ortholog b) Analog
c) Xenolog d) All are homologs
- vii. Which of these is not a primary database?
- a) DDBJ c) GenBank
b) REBASE d) PDB
- viii. PAM250 is
- a) alignment tool c) scoring matrix
b) educational resource d) sequencing method

2. Write briefly on any seven:

(7x2=14 marks)

- a) Linkers and adapters
- b) Role of Alkaline phosphatase in ligation
- c) Expression vectors
- d) Taqman probe
- e) Protein super secondary structure
- f) Global alignment
- g) Scoring matrix
- h) Algorithm
- i) Structural genomics

Answer the following:

3. a) Give a comparative account of restriction endonuclease types. (06)
b) Describe the principle and uses of subtractive hybridization (06)

OR

b) Write notes on
i) *Taq* DNA polymerase (06) ii) T4 DNA ligase (06)

4. a) Write a note on the principle, advantages and limitations of shot gun sequencing
b) Explain the properties and uses of RFLP markers (06)

OR

b) What are the requirements for patenting? Outline the process for obtaining a patent. (06)

5. a) List various databases and discuss nucleotide databases in detail (06)
b) Write a note (**any one**)
(i) BLAST (06) (ii) PDB (06)

6. a) Explain protein 3D structure prediction. (06)
b) Write a note on CATH (06)

OR

b) Discuss secondary structure prediction (06)

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