

Total No. of Printed Pages—3

6 SEM TDC BOT M 4

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(May)

BOTANY

(Major)

Course : 604

(Biophysics and Bioinformatics)

Full Marks : 48

Pass Marks : 19

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

1. (a) Write the correct answers of the following : 1×3=3
- (i) SWISS-PROT is a database of nucleic acid / protein sequences / structures / None of the above.
- (ii) Which protocol is used to access data using WWW?
(HTTP / HTML / FTP / SMTP)
- (iii) Two-dimensional chromatography is a type of paper / gas-liquid / column / affinity chromatography.

(2)

(b) Fill up the blanks : 1×2=2

(i) — is used to determine acidity and alkalinity of substances.

(ii) Flow and transformation of energy taking place in living system is called —.

2. Write short accounts of the following : 3×3=9

(a) Second law of thermodynamics

(b) Mitochondrial bioenergetics

(c) Thin layer chromatography

3. What is buffer solution? How does it act?

Describe the significance of buffer solution in biological system.

3+4+4=11

Or

Define isotope and radioactivity. Give an account of the biological applications of radioactive isotopes.

5+6=11

4. What is sequence alignment? Define pair-wise and multiple sequence alignments.

Discuss the DOT-PLOT method of sequence alignment.

2+4+5=11

(3)

Or

What do you mean by phylogenetic analysis?
Draw and describe a phylogenetic tree
representing evolutionary relationship
between species.

3+3+5=11

5. Write short accounts of the following
(any three) :

4×3=12

- (a) Scope of bioinformatics
- (b) Internet
- (c) Primary and secondary databases
- (d) Data mining
- (e) FASTA

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