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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.

(b) Fill up the blanks :

- (i) — is used to determine ^{1×2=2} acidity and alkalinity of substances.
- (ii) Flow and transformation of energy taking place in living system is called —.

Or

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

3+3+5=11

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 pairwise and multiple sequence alignments. Discuss the DOT-PLOT method of sequence alignment.

2+4+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
