

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) Choose the correct answer of the following : 1×3=3

(i) A measure of the tendency of a chemical species to acquire electrons and thereby be reduced is called chemical potential / water potential / redox potential.

(ii) True solution / Buffer solution / Colloidal solution is a homogeneous mixture of two or more substances in which the substance dissolved (solute) in solvent has the particle size of less than 10^{-9} m or 1 nm.

(iii) Determination of the concentration of substances made with the application of spectrum of light, the phenomenon is called spectrophotometry / chromatography / NMR.

(b) Fill in the blanks : 1×2=2

(i) _____ is a protein sequence database.

(ii) The full form of NCBI is _____.

(c) Write short accounts of the following :

3×3=9

(i) Ultrasound

(ii) Data mining

(iii) Scope of bioinformatics

2. What are isotopes? How can you measure radioisotopes? Give an account of the importance of isotopes in biological studies.

3+3+5=11

(3)

Or

What do you mean by chromatography? Mention the different types of chromatographic technique. Give an illustrative account of paper chromatography and its applications.

2+3+6=11

3. What do you mean by sequence alignment? What are the different tools of sequence alignment? Give an illustrative account of global and local alignments.

2+4+5=11

Or

What do you mean by phylogenetic analysis? What are the basic concepts of steps in evaluation of phylogeny? How can you construct a phylogenetic tree?

2+4+5=11

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

4×3=12

- (a) LASER
- (b) Laws of thermodynamics
- (c) SWISS PROT
- (d) Web browser
- (e) X-ray crystallography

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