

2019

(May)

BOTANY

(Major)

Course : 604

(Biophysics and Bioinformatics)

Full Marks : 48

Pass Marks : 19/14

Time : 2 hours

The figures in the margin indicate full marks
for the questions

1. (a) Choose the correct answer of the following : $1 \times 3 = 3$

(i) In sequence analysis, we do not align

(1) match characters

(2) mismatch characters

(3) two gaps or blanks

(4) None of the above

(Turn Over)

(ii) The full form of URL is

- (1) Universal Resource Locator
- (2) Uniform Resource Locator
- (3) Unidentified Resource Locator
- (4) Union Resource Locator

(iii) Two proteins have same molecular weight. All of the following techniques can be used for its separation, except

- (1) ion exchange
- (2) affinity chromatography
- (3) SDS-PAGE
- (4) gel filtration

(b) Fill in the blanks :

(i) The full form of LASER is Light _____ by stimulated emission of radiation.

(ii) Geiger-Muller counter is an instrument to measure _____.

(c) Write short notes on the following : $3 \times 3 = 9$

- (i) pH and Buffer
- (ii) Redox Potential
- (iii) Isotopes

2. What do you mean by thermodynamic principle? Explain first law of thermodynamics. Discuss about free energy and entropy.

(Continued)

Or

Write notes on the following :

- (a) Scope and applications of biophysics $2+4=6$
5
- (b) Bioenergetics

3. What do you mean by biological databases? How can you classify biological databases? Give an account of nucleotide sequence database with special reference to NCBI database. $2+4+5=11$

Or

Write notes on the following :

- (a) Pairwise and multiple sequence alignment $2+2=4$
- (b) Multidisciplinary approach and scope of bioinformatics $3+4=7$

4. Write short notes on any three of the following : $4 \times 3 = 12$

- (a) FASTA
- (b) ENTREZ
- (c) World Wide Web
- (d) Swiss PROT
- (e) Phylogenetic tree
