

Total No. of Printed Pages—4

5 SEM TDC DSE ZOO (CBCS) 2 (H)

2023

(November)

ZOOLOGY

(Discipline Specific Elective)

(For Honours)

Paper : DSE-2

(**Computational Biology**)

Full Marks : 53

Pass Marks : 21

Time : 3 hours

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

1. Choose the correct option : 1×5=5

(a) Genome refers to

- (i) the DNA of an organism
- (ii) the total DNA and RNA of an organism
- (iii) the entire genes of an organism
- (iv) None of the above

(2)

- (b) DNA sequencing followed by genome annotation are steps of
- (i) functional genomics
 - (ii) structural genomics
 - (iii) transcriptomics
 - (iv) comparative genomics
- (c) Variation between individuals due to single base changes is called as
- (i) ESTs
 - (ii) SNPs
 - (iii) transversion
 - (iv) body map
- (d) Which of the following is a protein structure database?
- (i) PDB
 - (ii) SWISS-PROT
 - (iii) DDBJ
 - (iv) GenBank
- (e) Quantitative variables that can have any numerical values are called
- (i) quantitative variable
 - (ii) discrete variable
 - (iii) continuous variable
 - (iv) absolute variable

24P/212

(Continued)

(3)

2. Write very short answers of any *three* of the following : 3×3=9
- (a) What is metabolomics?
 - (b) Define molecular phylogeny.
 - (c) What are the different types of sequence alignments?
 - (d) Write three major limitations of bioinformatics.
 - (e) What are the sequence submission tools?
3. Write short notes on any *three* of the following : 5×3=15
- (a) GenBank
 - (b) SWISS-PROT
 - (c) DDBJ
 - (d) Metabolic pathway database
 - (e) Small molecule database
4. What is bioinformatics? Write on its importances, goals and scopes. 2+4=6
- Or
- Write how bioinformatics is helpful in drug discovery. 6

24P/212

(Turn Over)

5. What do you understand by 'scoring matrices' in bioinformatics? What are the differences between PAM and BLOSUM?

2+4=6

Or

What is microarray? Write a note on it. 6

6. Explain BLAST and FASTA. 3+3=6

Or

What do you understand by 'data retrieval'?
Name some data retrieval systems. 4+2=6

7. Write explanatory notes on any *two* of the following : 3×2=6

- (a) Coefficient of variation
- (b) Chi-square test
- (c) Z-test
- (d) t-test
