

**2024/TDC (CBCS)/EVEN/SEM/
BTCDSE-602T (A/B)/012**

TDC (CBCS) Even Semester Exam., 2024

BIOTECHNOLOGY

(6th Semester)

Course No. : BTCDSE-602T

Full Marks : 50

Pass Marks : 20

Time : 3 hours

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

**Candidates have to answer either from Option—A
or from Option—B**

OPTION—A

Course No. : BTCDSE-602T (A)

(Biostatistics)

UNIT—I

1. Answer any *three* of the following questions :

1×3=3

- (a) What is LAN?**
- (b) What is MAN?**
- (c) Define database searching.**
- (d) What is retrieval of data?**

(2)

2. Answer any *one* of the following questions : 2
(a) Write down the characteristics of computers.
(b) Write a note on MS-Office package.
3. Answer any *one* of the following questions : 5
(a) Write an essay on capabilities of computers.
(b) Give a detailed account of hardware and software.

UNIT—II

4. Answer any *three* of the following questions : 1×3=3
(a) Define primary data.
(b) What is skewness?
(c) What is dispersion?
(d) Define kurtosis.
5. Answer any *one* of the following questions : 2
(a) Write about types of data.
(b) Write a note on measures of central tendency.
6. Answer any *one* of the following questions : 5
(a) Give a detailed account of collection of data.
(b) Describe graphical representation of statistical data.

(3)

UNIT—III

7. Answer any *three* of the following questions : 1×3=3
(a) Define total probability.
(b) Give axiomatic definition of probability.
(c) Give classical definition of probability.
(d) Point out one significant aspect of studying probability.
8. Answer any *one* of the following questions : 2
(a) What is Poisson distribution?
(b) Write a note on normal distribution.
9. Answer any *one* of the following questions : 5
(a) Give an account of theorems on compound probability.
(b) Write an explanatory note on binomial distribution.

UNIT—IV

10. Answer any *three* of the following questions : 1×3=3
(a) Define sampling.
(b) What do you mean by degrees of freedom (df)?
(c) What is small sample test?
(d) Mention one use of study of sampling.

(4)

11. Answer any *one* of the following questions : 2
- (a) Write about the methods of sampling.
 - (b) What is large sample test?

12. Answer any *one* of the following questions : 5
- (a) Give a detailed account of confidence level and critical region. $2\frac{1}{2}+2\frac{1}{2}=5$
 - (b) Describe testing of hypothesis and standard error. $2\frac{1}{2}+2\frac{1}{2}=5$

UNIT—V

13. Answer any *three* of the following questions : $1\times 3=3$
- (a) What is goodness of fit?
 - (b) Define test of significance.
 - (c) What is correlation?
 - (d) What do you mean by $p=0.05$?

14. Answer any *one* of the following questions : 2
- (a) Write a brief account of *t*-test.
 - (b) Write a note on regression.

15. Answer any *one* of the following questions : 5
- (a) Give an illustrated account of analysis of variance (ANOVA).
 - (b) Describe chi-square test in detail.

(5)

OPTION—B

Course No. : BTCDSE-602T (B)

(Bioinformatics)

UNIT—I

1. Answer any *three* of the following questions : $1\times 3=3$

- (a) Define bioinformatics.
- (b) What is EMBL?
- (c) What is OMIM?
- (d) What is DDBJ?

2. Answer any *one* of the following questions : 2

- (a) Give a brief account of Entrez.
- (b) Write a note on history of bioinformatics.

3. Answer any *one* of the following questions : 5

- (a) Write about the notion of homology. Add a note on sequence information sources. $2\frac{1}{2}+2\frac{1}{2}=5$
- (b) Write notes on GenBank and UniGene. $2\frac{1}{2}+2\frac{1}{2}=5$

(6)

UNIT—II

4. Answer any *three* of the following questions :

1×3=3

- (a) What do you mean by protein information sources?
- (b) What is PDB?
- (c) Define chromatograms.
- (d) Name the enzyme used in PCR.

5. Answer any *one* of the following questions :

2

- (a) Write a note on Blots.
- (b) Give a short account of microarrays.

6. Answer any *one* of the following questions :

5

- (a) Give a detailed account of mass spectrometry.
- (b) Write notes on SwissProt and TREMBL.

2½+2½=5

UNIT—III

7. Answer any *three* of the following questions :

1×3=3

- (a) What is sequence analysis?
- (b) What is cladistics?

(7)

(c) What do you mean by outline of sequence assembly?

(d) Define mutation.

8. Answer any *one* of the following questions :

2

- (a) Write a note on substitution matrices.
- (b) Give a short account of pairwise alignments.

9. Answer any *one* of the following questions :

5

- (a) Give a detailed account of phylogeny analysis.
- (b) Write an explanatory note on 'Detecting Open Reading Frames'.

UNIT—IV

10. Answer any *three* of the following questions :

1×3=3

- (a) Define consensus tree.
- (b) What is phylogeny?
- (c) What is PSI-BLAST?
- (d) What do you mean by dendrogram?

11. Answer any *one* of the following questions :

2

- (a) Write a note on cladogram.
- (b) Write about NJ method.

12. Answer any *one* of the following questions : 5

- (a) Give an account of construction of phylogenetic tree.
- (b) Write an explanatory note on multiple sequence alignment.

UNIT—V

13. Answer any *three* of the following questions : 1×3=3

- (a) What is query sequence?
- (b) What do you mean by 'searching databases'?
- (c) What is SRS?
- (d) Define RasMol.

14. Answer any *one* of the following questions : 2

- (a) Write a note on sequence similarity searches.
- (b) Give a short account of data submission.

15. Answer any *one* of the following questions : 5

- (a) Give an account of BLAST.
- (b) Write a note on FASTA.
