



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY

SECOND SEMESTER – APRIL 2016

BT 2824 - BIOINFORMATICS & RESEARCH METHODS

Date: 20-04-2016
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

PART – A (20 Marks)

Answer ALL the Questions

I. Choose the correct answer

(5 x 1 = 5 Marks)

- Who gave the Atlas of Protein Sequence and Structure?
a) Altschul b) Attwood c) Dayhoff d) Tim Bernes Lee
- Chromosomes of the cells assume the most condensed stage during which phase of mitosis?
a) Anaphase b) Prophase c) Prometaphase d) Telophase
- Which of the following reacts with free cysteines to form S-Nitrothiols?
a) NO b) NO₂ c) N₂O d) HNO₃
- Darwin's expeditions were examples of which type of research?
a) Descriptive b) Exploratory c) Empirical d) Analytical
- Choose a non-parametric test equivalent to independent sample t test
a) Kruskal-wallis test b) Mann Whitney test
c) Rank Sum test d) Tukey test

II. State whether the following are true or false, if false, give reason

(5x1=5 Marks)

- Walter Goad was associated with GenBank.
- Deliberate sampling is a probability sampling method.
- The recombinant offsprings are always higher in number in a testcross.
- Motifs are super secondary structures.
- Histograms are used for continuous data.

III. Complete the following

(5 x 1= 5 Marks)

- Worldwide Web was developed by _____.
- The dye used in R banding is _____.
- _____ tool is used to find structurally conserved domains in a protein.
- Incorrect rejection of a true null hypothesis is _____ error.
- Variance is denoted as _____.

IV. Answer the following, each within 50 words

(5 x 1 = 5 Marks)

- Mention any one contribution of Margaret Dayhoff .
- Which was the first published genome?
- Define a polymorphic marker
- What is a motif?
- State a difference between mean deviation and standard deviation.

PART B

(5 x 8 = 40 marks)

Answer the following, each within 500 words. Draw diagrams wherever necessary

21. (a) Write an account on
i. ENTREZ ii. CATH

OR

(b) Explain the Genbank flat file format.

22. (a) Summarize the steps involved in *ab initio* gene prediction.

OR

(b) Illustrate Radiation hybrid mapping.

23. (a) Give an account on any two post translational modifications and the tools used for prediction.

OR

(b) Explain any two tools used to study the physical properties of protein.

24. (a) Comment on any four types of research.

OR

(b) Mention the components of research proposal.

25. (a) Outline the steps in hypothesis testing.

OR

(b) Evaluate the advantages of any four data representation methods in research.

PART – C

(2 x 20 = 40 Marks)

Answer any TWO of the following, each within 1500 words. Draw diagrams wherever necessary.

26. Elaborate on the biological sequence and structure databases.

27. Write in detail about cDNA library construction, EST sequence quality and EST clustering.

28. Evaluate the approaches for protein structure prediction.

29. Describe the principal factors behind experimental design and the types of formal experimental design.
