

(v) Regression line Y on X gives best estimate of the value of _____ when the value of _____ is given.

(vi) Arrangement of data into rows and columns is called _____

(b) Define the following (any five): (5×1=5)

- (i) Secondary data
- (ii) Independent variables
- (iii) Attributes
- (iv) Histogram
- (v) Parameter
- (vi) Hypothesis

2. Differentiate between the following (any two)

- (a) Mean and median
- (b) Descriptive statistics and inferential statistics
- (c) Chi-square test and student's t-test (2×5=10)

3. Write short notes on following (any two) (2×5=10)

- (a) Sampling methods
- (b) Application of biostatistics
- (c) Measures of dispersion

4. Define correlation and discuss its types. Mention the similarities and dissimilarities between correlation and regression. (5+5)

(5000)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 6038

H

Unique Paper Code : 2164001206

Name of the Paper : Informatics and Statistics for
Biology and Allied Sciences

Name of the Course : Common Prog. Group -
GE

Semester : II

Duration : 2 Hours Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **Part A** and **Part B** on separate answer sheets.
3. Question no. 1 is compulsory of **both** the sections.
4. Attempt any **three** questions from **Part A** and **three** questions from **Part B** including Q. No. 1 of **both** the sections.
5. Attempt **All** parts of a question together.

P.T.O.

Part A

1. (a) Match the following : (5×1=5)

- | | |
|------------|---------------------|
| i. DDBJ | j. EBI |
| ii. PubMed | k. NIG |
| iii. KEGG | l. NCBI |
| iv. PDB | m. Kyoto University |
| v. UniPort | n. RCSB |

(b) Fill in the blanks (any five) (5×1=5)

- (i) _____ has been called the "mother and father of bioinformatics".
- (ii) _____ is the study of how genes and intergenic regions of the genome contribute to different biological processes.
- (iii) A _____ is a scaled phylogenetic tree in which the branch lengths are proportional to the amount of evolutionary divergence.
- (iv) In homology, _____ sequences are related by common ancestry because of speciation.
- (v) In _____ all six reading frames of the nucleic acid sequence are translated on the query and used to search the protein database.

(vi) Within a phylogenetic tree, a branch that includes a single common ancestor and all of its descendants is called a _____.

2. Write short notes on following (any two) (2×5=10)

- (i) Scope of bioinformatics in drug design
- (ii) Significance of biological databases
- (iii) GenBank

3. What are the differences between phenotypic phylogeny and molecular phylogeny? Give an account of the maximum parsimony method. (4+6=10)

4. What are the objectives of performing an alignment? Discuss the principles of alignment. Write the differences between PAM and BLOSUM. (2+4+4=10)

Part B

1. (a) Fill in the blanks (any five) (5×1=5)

- (i) Diagram and graphs are tools of _____
- (ii) σ is the representation of _____
- (iii) Find the mode in the following data set- 12, 11, 14, 13, 14, 15 _____
- (iv) Correlation coefficient is represented by the symbol _____