

UG 5th Semester Examination 2021**ZOOLOGY (Honours)****Paper : DSE-2 (A/B)****(Biostatistics / Bioinformatics)****(CBCS)**

Full Marks: 25

Time: Two Hours

*The figures in the margin indicate full marks.**Candidates are required to give answers (by selecting either DSE-2 A: Biostatistics Or DSE-2 B: Bioinformatics) with their own words as far as practicable.***DSE-2 A: Biostatistics**

1. Answer any *eight* questions from the following: $\frac{1}{2} \times 8 = 4$
- Probability of any event ranges from 0 to 1. (True/False)
 - What is the mode of the following data: 2, 4, 3, 6, 3, 5, 3, 9, 3
 - What will be the degree of freedom for a data where total number of observations are 10?
 - State the relation between variance and standard deviation.
 - When a data is in perfect correlation, it lies exactly on straight line. (True/False)
 - What does “p” depict in a Chi square test?
 - The measure of central tendency is known as _____ (Average/Standard error)
 - Colour of flower is the example of _____ (Qualitative/Quantitative variable)
 - Mode is the example of positional average. (True/False)
 - Who first coined the term standard deviation?
 - ANOVA stands for _____ (Fill in the blank)
 - Write the full form of SPSS.
2. Answer any *two* questions from the following: $2\frac{1}{2} \times 2 = 5$
- Differentiate between Standard deviation and Standard error.
 - What is degree of freedom? How is it calculated.
 - Find the mean and median of the following numbers:
21, 12, 49, 37, 88, 46, 55, 74, 63
 - What do you mean by coefficient of correlation? State its properties.
3. Answer any *four* questions from the following: $4 \times 4 = 16$
- Calculate standard deviation for the following data: 48, 43, 65, 57, 31, 60, 37, 48, 59, 78
 - What is t test? State its properties. Write down the applications of “t” distribution. 1+2+1
 - What do you mean by central tendency? Write the merits and demerits of mode.

- d) What do you mean by ANOVA? Write down its assumptions. Define mean square.
- e) In a cross between black and white coat-coloured mice, the F₂ individual segregated into 787 black and 277 white coat-coloured individuals. Test whether the results agree with the expected 3:1 ratio using chi square test (p=5%)
- f) Write the steps to construct the frequency distribution table.
- g) Write a short note on regression analysis.

Or

DSE-2 B: Bioinformatics

1. Answer any *eight* questions from the following:

$\frac{1}{2} \times 8 = 4$

- (a) Name a nucleotide sequence data base.
- (b) Expand RAM.
- (c) Write one function of ALU.
- (d) Name a software/application used for studying phylogenetic relationship.
- (e) Keyboard is a _____ (Software/ Hardware)
- (f) Write the full form of BLAST.
- (g) Zero and one are the components of _____ number system.
- (h) State one utility of telnet.
- (i) Expand the term UPGMA.
- (j) Give an example of an operating system.
- (k) Name a tool for studying protein sequences.
- (l) _____ sequence can be obtained using FASTA.

2. Answer any *two* questions from the following:

$2\frac{1}{2} \times 2 = 5$

- (a) What is LAN?
- (b) Write a short note on “ClustalW”
- (c) What is octal number system?
- (d) State the utility of Phylip in phylogenetic studies.

3. Answer any *four* questions from the following:

$4 \times 4 = 16$

- a) Write the steps involved in nucleotide search using BLAST.
- b) Briefly explain different methods of phylogenetic analysis.
- c) Expand the following terms: a) WWW b) HTML c) FTP d) NCBI
- d) Differentiate between RAM and ROM.
- e) Draw a schematic diagram of a typical digital computer showing its major components.

- f) How will you determine the physicochemical properties of a protein based on its sequence?
Explain the process.
- g) Briefly discuss BLOSUM62.