(7 pages)

Reg. No. :

Code No. : 5607

Sub. Code : KZOM 32/ PZOM 33

M.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2020.

Third Semester

Zoology

BIOSTATISTICS AND BIOINFORMATICS

(For those who joined in July 2016 and afterwards)

Time : Three hours

Maximum : 75 marks

PART A — $(10 \times 1 = 10 \text{ marks})$

Answer ALL the questions.

Choose the correct answer :

1. Standard deviation is the square of

- (a) Mode (b) Standard error
- (c) Variance (d) Regression
- 2. Correlation co-efficient is a number between
 - (a) +1 and +2 (b) 0 and +1
 - (c) -1 and 0 (d) -1 and +1

- 3. An increase in the values of one variable is accompanied by a decrease in the value of the other variable
 - (a) Linear
 - (b) Negative correlation
 - (c) Partial
 - (d) Positive correlation
- 4. A circle divided into sectors proportional to the frequency of items shown is called
 - (a) Pie chart (b) Histogram
 - (c) Bar Chart (d) Frequency polygon
- 5. The student's t-test is called
 - (a) A list for comparing averages
 - (b) A list for comparing variances
 - (c) A non-parametric test
 - (d) A parameter test
- 6. Test for Goodness of fit
 - (a) t-test (b) x^2 -test
 - (c) F-test (d) None of the above
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7.	The dist	frequency polygons ribution are	of r	nany biological data			
	(a)	'C' shaped	(b)	'U' shaped			
	(c)	'S' shaped	(d)	Bell shaped			
8.	Measuring the magnitude of liner relationship between two variables are called as						
	(a)	ANOVA	(b)	Regression			
	(c)	Correlation	(d)	None of these above			
9.	Pubmed is one of the popular resources of						
	(a)	NCBI	(b)	EMBL			
	(c)	DDBJ	(d)	SWISS-PROT			
10.	How many programs are there in BLAST?						
	(a)	Four	(b)	Five			
	(c)	Six	(d)	Seven			
PART B — $(5 \times 5 = 25 \text{ marks})$							

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Explain how frequency distribution is constructed.

Or

(b) Give an account on merit and limitation of sampling.

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12. (a) Compute the standard deviation for the following data representing particular bacteria (per 100 ml) of 10 samples of seawater

49, 70, 54, 67, 59, 40, 61, 69, 7l, 52

Or

- (b) Explain the uses of scatter diagram and correlation graphs in the study of relation between two variables.
- 13. (a) Define normal distribution and list out the properties.

Or

- (b) Explain the principle underlying hypothesis testing.
- 14. (a) Explain in brief about the randomized block design.

Or

- (b) Point out the usefulness of analysis of variance.
- 15. (a) Give a brief note on the types of sequence used in bioinformatics.

Or

(b) Explain in brief about the tools used in protein functional analysis.

Page 4 Code No. : 5607 [P.T.O.] PART C — $(5 \times 8 = 40 \text{ marks})$

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Construct a frequency distribution table and draw smooth frequency curve from the following data :

Length of larvae (cm) 2-4 4-6 6-8 8-10 10-12 No 5 10 25 15 5

Or

- (b) Explain different methods of sampling and mention situation for their use.
- 17. (a) Give a brief account on important statistical methods of measuring dispersion.

 \mathbf{Or}

- (b) The length and weight of 7 groups (fishes) belonging to a particular species is given below. Find the correlation coefficient of these two variables :
- Length 11.7 13.9 15.5 17.8 18.5 19.2 21.0 (cm) X
- Weight 7.10 12.42 15.35 23.20 28.45 32.25 39.84 Y

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18. (a) Explain the concepts of Probability with suitable examples.

Or

- (b) Explain the concept of test of significance with suitable examples.
- 19. (a) Give two application of t-test. Two samples of male fish were given hormone treatments and blood calcium level was measured. The results were

Sample I 0.87 0.18 1.12 0.83 1.19

Sample II 1.66 0.92 1.08 0.75 0.45

Test at 5% level of significance, the mean percentage of calcium level of the two samples of male fish

Or

(b) A common survey was conducted upon fishes taken at random from different ponds to assess the significance of possible variation in its body weight (gms). The results are as follows :

Test at 5% level whether variation in the body weight of fishes in different ponds is significant?

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	Pond types				
А	В	\mathbf{C}	D		
Weight (gm)	Weight (gm)	Weight (gm)	Weight (gm)		
8	12	18	13		
10	11	12	9		
12	9	16	12		
8	14	6	16		
7	4	8	15		

20. (a) Write an essay on the nomenclature of DNA sequences.

Or

(b) Describe the molecular modeling and visualizing tools and their uses in molecular biology.