M.Sc.

2017

4th Semester Examination

ZOOLOGY

PAPER—ZOO-401

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Answer *all* questions of the following.

Group–A

(*Biodiversity, Pollution and Environmental Management*)

1. Answer any *two* questions of the following : 2×2

(a) Mention the criteria for declaring a place as a 'Hot-Spot'.

(b) What is SLOSS ?

(c) What are the different types of bioindicator species ?

(d) Differentiate Point Pollution from Non-Point with an examples.

2. Answer any *two* questions of the following : 2×4

(a) Highlight multidimensional environmental impact of chemical fertilisers.

(b) Briefly discuss the role meteorological parameters in the formation of 'Acid Rain'.

(c) Enlist different causative factors of soil erosion.

(d) State the causes and effects of sound pollution.

3. Answer any *one* question of the following : 1×8

(a) Mention the differences between Ecodegradation and pollution. What are the different steps of environmental management. Add a note on major components of 'Green Movement'. 2+3+3

(b) Draw the relationships among green house effect, global warming and climate change. Add a note on the merits and demerits of Environmental Protection Acts in India. 4+4

(Group–B)

(Biostatistics)

4. Answer any *two* questions of the following : 2×2

(a) Prove that Arithmetic mean of regression co-efficients is greater than the correlation co-efficient.

(b) When the frequency distribution is not symmetrical if said to be_____. Explain your answer.

(c) What should be the null hypothesis for testing of 'Goodness of fit'?

(d) What do you mean by parametric and non parametric statistics?

5. Answer any *two* questions of the following : 2×4

(a) (i) What is poison distribution?

(ii) Workout the probability of random occurrence of 10 goiter cases in a sample of 250 individuals from a population having 0·6% incidence of the hormonal disorder. Compute the absolute expected frequency of such goiter cases in 1000 such sample. 1+3

(b) The coefficient of ranks correlation between the marks in Evolution and Biochemistry obtained by a group of Vidyasagar University P.G. Students in 0·9819 and sum of the square of the differences in ranks is 13. Find the number of students in the group. 4

(c) Ten fishes of Tilapia fishes were grown under some conditions but fed with two different combination of food. Gill weights (mg) differ and results were are follows :

	Mean gill weight	Variance
Group-A	85	129·8
Group-B	66	43·5

Is there any significant difference in body weight between two groups ?

Critical t value : $t_{0\cdot05(8)}=2\cdot30$. 4

(d) Two variates x and y when expressed as deviation from their respective means are given as follows. Find their standard deviations and co-efficeent of correlation and test its significance at 5% level. [$t_{0\cdot05(9)}=2\cdot26$] 4

6. Answer any *one* question of the following : 1×8

(a) The impact of four different Bio active compounds (Experimental Drug) named A, B, C and D on the reduction of the serum creatinine level on kidney patients. The creatinine level of the patients were measured for 5 (five) replicates. Carryout One-way ANOVA to deduce the effects of the Drugs on the serum creatinine level.

[Given $F_{3,16(0.05)}=3.24$] 8

Replicate	Bioactive Compounds			
	A	B	C	D
1	4·9	3·2	2·6	6·7
2	4·1	3·6	2·7	6·3
3	4·7	3·8	2·4	6·1
4	4·3	3·4	2·3	6·2
5	4·5	3·5	2·5	6·3

(b) (i) 10 persons were recorded with age (x) and systolic blood pressure (y) the results are given below :

Variable	Age (x)	Blood pressure (y)
Mean	5·3	142
Variance	130	165

$\Sigma(x - \bar{x})(y - \bar{y}) = 1220$

Find the appropriate regression equation and estimate the blood pressure of a person whose age is 60 years. 5

(ii) The data shows no. of parasite (*Plasmodium sp.*) in the blood flim of :

Patients 10, 12, 14, 15, 17.

Find Skewness and Kurtosois. 3