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C/16/M.Sc./4th Seme./ZOO-401

M.Sc.

2016

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) Enlist different Biodiversity Hot-spots in India.

(Turn Over)

- (b) What is the significance of Red Data Book ?
- (c) Differentiate environmental pollutants and contaminants.
- (d) What is bio-safety ? State its significance.

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

- (a) What is Bio-invasion ? State its impact on environment.
- (b) Mention different steps of Environmental Management.
- (c) What are the environmental consequences of thermal pollution ?
- (d) Highlight the criteria for developing 'Green Belt' in Industrial areas.

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

- (a) Define Entrophication. Schematically highlight the consequences of entrophication. Differentiate cultural entrophication from natural one. 2+4+2
- (b) Explain the following : 2+2+2+2
 - (i) Stone cancer ;

- (ii) Soil erosion ;
- (iii) Non point pollution ;
- (iv) CFC.

(Group-B)

(Biostatistics)

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

- (a) Explain measure of peakedness of frequency distribution and prove its suitable formula. 2
- (b) Provide a brief account on types of correlation. 2
- (c) A distribution is known to be normal. The quartiles are 8.64 and 14.32. Calculate the mean and standard deviations. 2
- (d) Write notes on Parametric and Non-parametric Statistics. 2

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

- (a) (i) What is Linear regression ?
- (ii) X and Y are a pair of correlated variables. Ten observations of their values (X, Y) have the following results :

$$\Sigma X = 55, \Sigma Y = 55, \Sigma XY = 350, \Sigma X^2 = 385.$$

Predict the value of Y when the values of X is 6.

1+3

- (b) (i) Random samples drawn from two places gave the following data relating to the wing length of Anopheles mosquitoes :

	Place - A	Place - B
Mean	$\bar{x}_1 = 3.60$	$\bar{x}_2 = 3.58$
Standard deviation	$S_1 = 1.8$	$S_2 = 1.6$
Number of sample	$n_1 = 50$	$n_2 = 50$

Test at 5% level of significance that the mean wing length is the same for mosquitoes at two places.

- (ii) What are criterion and predictor ?

3+1

- (c) What is error of inference? Write the factors that cause Type II errors.

Why t-test is preferred over anova ?

1+2+1

- (d) Two variates x and y when expressed as deviation from their respective means are given as follows.

Find their standard deviations and co-efficient of correlation and test its significance at 5% level.

$$[t_{0.05(a)} = 2.26]$$

-4	-3	-2	-1	0	1	2	3	4
-3	-3	-4	0	4	1	2	-2	-1

4

6. (a) (i) Write comment on the modes of Anova.
 (ii) Four different pesticide solutions are being compared to examine their effectiveness in controlling pest. The data are given below :

Pesticide Solution	Number of days			
	1	2	2	4
A	04	05	07	21
B	14	16	18	44
C	17	22	15	39
D	11	18	02	25

Is there any significant difference in their effectiveness at 0.05 level in degree of freedom (2, 9) and critical value 5.14.

2+6

- (b) (i) A calculating machine while calculating mean and standard deviation of 25 readings misread one observation as 36 instead of 26. The results given by the machine are $\sigma = 5.0$ and $\bar{x} = 30$.

What are the correct values of \bar{x} and σ ?

- (ii) Prove that correlation coefficient 'r' does not depend on the origin of Scale of observation.

3+5