2011

M.Sc.

1st Semester Examination

ZOOLOGY

PAPER—ZOO-102

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.

Write the answers to questions of each Group in seperate booklets.

Group—A

(Biostatistics)

1. Write briefly about any *two* of the following : 2×2

(i) What do you mean by Fixed model regression ?

(ii) What is Predictor ?

(iii) What do you mean by 'F' ?

(iv) Explain normal distribution.

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

(i) State the properties of correlation.

(ii) Null hypothesis and alternative hypothesis.

(iii) Briefly describe chi-square test for goodness of fit and chi-square test of independence.

(iv) Compute the variance (s^2) and unbiased standard deviation (SD) for group data femur length scores of mosquito, 31, 32, 38, 40, 36, 34, 41, 40, 37, 34.

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

(i) Test for a significant difference between the mean tracheal ventilation scores (ml/min) of the following two groups of beetles ($\alpha = 0{\cdot}05$) :

Group 1 (X_1) 81, 82, 75, 80, 85, 78, 88, 78, 82, 75

Group 2 (X_2) 73, 71, 74, 70, 71, 72, 70, 65, 73, 70

$F_{0{\cdot}05(1,\ 19)} = 4{\cdot}38$; $F_{0{\cdot}05(1,\ 18)} = 4{\cdot}41$;

$F_{0{\cdot}05(2,\ 19)} = 3{\cdot}52$; $F_{0{\cdot}05(2,\ 18)} = 3{\cdot}55$.

(ii) Test for a significant difference between the mean winglength scores (mm) of the following two group of insects whose scores are (α = 0·05) :

Group 1 (X_1) 4·9, 5·2, 4·7, 5·3, 3·9, 5·4, 4·6, 4·9, 4·8, 5·1, 4·2, 4·8.

Group 2 (X_2) 3·1, 3·7, 3·5, 4·0, 3·3, 3·4, 3·3, 3·2, 3·0, 3·2,

$t_{0·05(21)}$ = 2·080 ; $t_{0·05(20)}$ = 2·086 ;

$t_{0·05(19)}$ = 2·093.

Group—B

(Ethology)

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

(a) What is FAP ?

(b) What is inclusive fitness ?

(c) What are sign stimulus and releaser ?

(d) What is hierarchy of drive ?

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

(a) Eusociality in mammals.

(b) Differentiate between vertial and oblique learning.

(c) What is optimization theory ?

(d) Compare instrumental learning and operant conditioning.

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

(a) Draw the average pay-off matrix to the attacker playing 'Hawk', 'Dove' and 'Bourgeois' strategies. Deduce under what proportion individuals playing 'Hawk' and 'Dove' strategies would be in Evolutionarily stable strategy situation.

4+4

(b) What is imprinting ? What is critical period ? What is following response ? Name types of imprinting with examples

2+2+2+2

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