

**2022**

**M.Sc.**

**4th Semester Examination (CCAEE)**

**ZOOLOGY**

**PAPER—ZOO-401**

*Full Marks : 40*

*Time : 2 Hours*

*The figures in the margin indicate full marks.*

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

*Illustrate the answers wherever necessary.*

**ZOO-401.1**

**ENVIRONMENTAL POLLUTION & MANAGEMENT**

**1. Answer any two questions : 2×2**

(a) What do you mean by pollutants? Classify with example.

*(Turn Over)*

- (b) State the difference between dry and wet acid rain with example.
- (c) State the difference between point and non-point pollution.
- (d) Why bioinvasion is an ecological problem?

2. Answer any *two* questions : 2×4

- (a) Write a note on cultural eutrophication.
- (b) Write a note on wildlife crime.
- (c) Explain why pugmarks are not reliable for wildlife census? What do you mean by wildlife corridor?
- (d) State the steps to be followed for sustainable wildlife conservation strategies.

3. Answer any *one* question : 1×8

- (a) What is photo chemical smog? Describe its formation with the help of detailed chemical reactions. 2+6

- (b) What is soil ? State a short note on paedogenesis. Name the important pollutants that are responsible for soil pollution and mention the measures taken for control of soil pollution.

2+2+2+2

### ZOO-401.2 BIostatistics

4. Answer any *two* questions : 2×2

- (a) What is normal distribution ?
- (b) Write a note on error of inference.
- (c) Provide a brief account of measure of dispersion.
- (d) Why geometric mean is stronger than arithmetic mean ?

5. Answer any *two* questions : 2×4

- (a) The following is the distribution of 136 individuals by 10 years age groups. Calculate the measure of Central tendency, which will appropriately describe the distribution.

Age group	0-9	10-19	20-29	30-39	40-49	50-59	60-69
No. of Persons	48	26	27	11	13	4	3

- (b) For a group of 50 male workers the mean and standard deviation of their weekly wages are Rs. 63 and Rs. 9 respectively. For a group of 40 female workers these are Rs. 54 and 6 respectively. Find the standard deviation of the combined group of 90 workers.
- (c) The following results were obtained from records of age ( $x$ ) and systolic blood pressure ( $y$ ) of a group of 10 fishermen :

Variable	Age ( $x$ )	Blood pressure ( $y$ )
Mean	53	142
Variance	130	165

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

Find the appropriate regression equation and estimate the blood pressure of a fishermen whose age is 53 years.

- (d) State the properties of Binomial distribution. Write down the expression of the binomial distribution.

6. Answer any one question : 1×8

- (a) (i) Find out the Pearson's correlation coefficient between shell height and shell breadth of the snails *Physa acuta*. Test the significance at 5% level of significance. Critical t value at 7 df is 2.36.

- (ii) Write a note on type-I & type-II error.

6+2

- (b) The varieties of A, B, C wheat were shown in 4 plots each and the following yields in quintal per acre were obtained.

A	B	C
8	7	2
4	5	5
6	5	4
7	3	4

Test the significance of difference between the yield of the varieties.

$$F_{0.05(2, 9)} = 4.26$$

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