2 0 1 4

ZOOLOGY

(Major)

Paper : 5.4

Full Marks : 60

Time : 3 hours

The figures in the margin indicate full marks
for the questions

1. Answer the following questions in brief :   1×6=6

    (a) Which instrument measures concentration of hydrogen ions in a solution?

    (b) What is 'line of best fit'?

    (c) Why is spectrophotometer also known as photometer?

    (d) Define 'less than ogive'.

    (e) What is the modern application of ultracentrifugation?

    (f) Write the disadvantages of harmonic mean.

(*Turn Over*)

2. Answer any *five* of the following questions :

$2 \times 5 = 10$

(a) Describe the merits and demerits of geometric mean.

(b) Describe the basic principle of SDS-PAGE gel electrophoresis.

(c) Describe the importance of statistics in Zoology.

(d) Describe the principle and procedures of dehydration step of histological techniques.

(e) Describe the significance of '*t*-test' and 'ANOVA'.

(f) Distinguish between phase contrast and fluorescence microscopy.

3. Answer any *three* of the following questions :

$5 \times 3 = 15$

(a) Describe the applications of radioisotopes in Zoology.

(b) Define standard deviation with suitable example.

(c) Describe the working principles of SEM and TEM. Comments on the advantages and disadvantages of both.

(Continued)

(d) The following are the numbers of family, genus and species of 9 orders of fishes collected from river Brahmaputra. Draw three pie diagram to represent family, genus and species-wise percentage of the collected data :

	Order	Family	Genus	Species
1.	Cypriniformes	3	17	25
2.	Siluriformes	7	10	14
3.	Perciformes	5	6	10
4.	Clupeiformes	1	1	1
5.	Cyprinodontiformes	1	2	3
6.	Osteoglossiformes	1	1	1
7.	Mugiliformes	1	2	2
8.	Tetradontiformes	1	1	1
9.	Beloniformes	1	1	1

4. Calculate mode from the following data using grouping and analyzing table : 4

x	15	20	25	30	35	40
f	4	6	12	10	7	3

Or

Write the basic principle of fluorescence microscope. How is specimen prepared for examination in the said microscope? 2+2=4

5. What is autoradiography? Describe the techniques of conventional autoradiography. 2+3=5

Or

What is goodness of fit? Discuss chi-square with suitable example. 2+3=5

6. What do you mean by sample? Describe different types of random sampling technique used in Biology.   3+7=10

Or

What do you mean by correlation? Describe different types of correlation. Describe Karl Pearson's coefficient of correlation with suitable example.   2+3+5=10

7. What is basic principle of chromatography? Describe briefly different types of chromatographic technique used in Biology. Write the application of HPLC.   2+6+2=10

Or

What is the difference between high-speed centrifuge and ultracentrifuge? Write the principle and procedure of ultracentrifuge.

3+7=10

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