

2019

ZOOLOGY

(Major)

Paper : 5.4

(**Biological Techniques and Biostatistics**)

Full Marks : 60

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. Answer the following questions : 1×7=7
 - (a) What is paired *t*-test?
 - (b) What is numerical aperture (NA) of a microscope?
 - (c) State the significance of pH value.
 - (d) How can long oocyte be frozen?
 - (e) Write the principle of geometric mean.
 - (f) What is radiotracer?
 - (g) What is reverse phase chromatography?

2. Answer any *four* of the following questions : 2×4=8
 - (a) What do you mean by standard error of mean?
 - (b) What is fluorescence chemical?

- (c) State the significance of Chi-square test.
- (d) What is cryotome?
- (e) Define concept of data and data processing.

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

3×5=15

- (a) What is Lambert-Beer law? Establish the relation between absorption and concentration.
- (b) Write the utility of biostatistics.
- (c) Discuss the basic difference in working principles of scanning electron microscope and transmission electron microscope.
- (d) What is computer language? Which programme language is used in Unix?
- (e) What is radioisotope? Write briefly the uses of radioisotopes in chromatographic process.
- (f) What is correlation in statistics? Explain the Karl Pearson's co-efficient of correlation.

4. What do you understand by sampling error? Write on the types of sampling error. What are the methods used to reduce sampling error? 3+4+3=10

Or

What is regression equation? What is line of best fit? Describe regression equation Y on X with suitable example. 2+2+6=10

5. What is assisted reproductive technology? Write about the different types of freezing process for sperm and ova preservation. Mention the characteristics of cryoprotectant. 3+5+2=10

Or

What is electrophoresis? Write about the theory of electrophoresis. Describe about the immunoelectrophoresis. 2+3+5=10

6. Describe the working principle and application of fluorescence and phase contrast microscopy with suitable illustrations. 5+5=10

(4)

Or

What is the basic principle of gas chromatography? Write about the application of gas chromatography in biology. Distinguish between paper chromatography and thin-layer chromatography. 2+6+2=10
