3 (Sem–5) ZOO M4

2021

(Held in 2022)

ZOOLOGY

(Major)

Paper : 5·4

(Biological Technique and Biostatistics)

Full Marks : 60

Time : Three hours

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

1. Answer the following questions very briefly :
    1×7=7

    (a) What is numerical aperture (NA) of a microscope ?

    (b) Define autoradiography.

    (c) Define standard deviation.

    (d) What is Rf value of chromatography ?

(e) Define mode.

(f) What is native gel electrophoresis ?

(g) What is arithmetic mean ?

2. Answer **any four** of the following questions : 2×4=8

(a) What is the basic difference between colorimeter and spectrophotometer ?

(b) Distinguish between median and mode.

(c) What is silver stain ? Write the importance of silver stain in histological study ?

(d) Distinguish between arithmetic mean and median.

(e) Describe about the machine language of a computer.

(f) What is linear regression in biostatistics ?

3. Answer **any three** of the following questions : 5×3=15

(a) What is freezing microtome ? Write the advantages and disadvantages of freezing microtome.

(b) Define autoradiography. Write the importance of receptor autoradiography in biology.

(c) What is the meaning of standard error of mean ? Write the difference between standard deviation and variance.

(d) Describe a less than 'ogive' with suitable example.

(e) The following are the 6 groups of planktons collected from three sampling stations of river Brahmaputra :

Planktons	Site–1	Site–2	Site–3
Bacillariophyceae	55	64	69
Chlorophyceae	105	98	78
Cyanophyceae	59	61	62
Copepoda	53	52	61
Rotifers	43	38	32
Cladocera	23	25	27

Represent the data using bar diagram.

4. Answer *any three* of the following
   questions :   10×3=30

   (a) What is fluorescence dye ? How does a
       fluorescence die work ? Write the
       importance of fluorescence dye in
       biological research.   3+4+3=10

   (b) Describe biological database. Write the
       importance of biological database for
       taxonomic study.   5+5=10

   (c) What is independent sample *t*-test ?
       Describe when to use the independent
       sample *t*-test. Discuss independent
       sample *t*-test with suitable example.
                                      2+2+6=10

   (d) What is HPLC ? Describe the reverse
       phase HPLC. Mention about the uses
       of HPLC in different fields. 3+3+4=10

   (e) Describe different sampling techniques
       used in biological research.   10

   (f) Distinguish between primary and
       secondary immunodeficiencies. Write
       a brief note on the acquired
       immunodeficiency syndrome.   4+6=10

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