

3 SEM TDC ZOO M 3 (N/O)

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(November)

ZOOLOGY

(Major)

Course : 303

(Bioinstrumentation and Biostatistics)

Time : 2 hours

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

(New Course)

Full Marks : 48

Pass Marks : 14

(Bioinstrumentation)

1. Fill in the blanks : 1×3=3

- (a) The phase that moves in chromatography technique is known as _____ phase.

(b) Electron microscope was invented by _____ in 1932.

(c) The limit of resolution for a light microscope is about _____.

2. Distinguish between any *two* of the following : 4½×2=9

(a) Microtomy and Ultramicrotomy

(b) TEM and SEM

(c) Colorimetry and Spectrophotometry

3. Write the principle and use of paper chromatography. Describe the process of paper chromatography for the separation of amino acid from a mixture. 3+3+5=11

4. Describe briefly the principle and uses of centrifugation. 4+3=7

Or

Write the principle and significance of phase contrast microscope.

(**Biostatistics**)

5. Choose the correct answer : 1×2=2

(a) Which of the following is not a measure of central tendency?

(i) Range

(ii) Mean

(iii) Median

(iv) Mode

(b) Which of the following tests is applied to test the equality of variance of two normal populations?

(i) Chi-square test

(ii) *t*-test

(iii) *F*-test

6. Explain briefly the scope and application of statistics in biological science. 4

Or

Define sampling. Write down the salient features of sampling methods.

7. Write short notes on any *three* of the following : 4×3=12

- (a) Cumulative frequency curve
- (b) Histogram
- (c) Correlation
- (d) Significance test

(Old Course)

Full Marks : 48

Pass Marks : 19

(**Bioinstrumentation**)

(Marks : 24)

1. (a) Fill in the blanks with suitable word(s) :

1×3=3

(i) The utility of phase contrast microscope is largely in _____.

(ii) _____ is used for separation of substances having different sizes.

(iii) _____ of invisible spectra is used in spectrophotometer.

- (b) Write briefly on the basic principle and application of spectrophotometer.

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2. (a) Distinguish between the following pairs (any two) :

3×2=6

(i) SEM and TEM

(ii) Ion exchange and Thin-layer chromatography

(iii) Magnification power and Resolution power of microscope

(b) Discuss on the working principle and application of colorimeter or rotary microtome. 5

3. Write in detail the basic components and working principle of either phase contrast microscope or kymograph. 5

(**Biostatistics**)

(Marks : 24)

4. Fill up the blanks with suitable word(s) : $1 \times 3 = 3$

(a) In _____ deviation, algebraic signs either positive or negative are not considered.

(b) The differences between population parameter and sample parameter is known as _____ error.

(c) Root square of the deviation taken from the mean is known as _____.

5. Distinguish between the following pairs (any two) : $3 \times 2 = 6$

(a) Discrete and Continuous data

(b) Geometric mean and Harmonic mean

(c) Paired and Unpaired *t*-test

6. Write short notes on any *three* of the following : 3×3=9

- (a) Coefficient of variation
- (b) Frequency distribution
- (c) Collection of statistical data
- (d) Probability theorems
- (e) Utility of statistics in biology

7. Discuss the procedure for calculation and conclusion drawn from either correlation analysis or regression analysis. 6
