

**TDC Odd Semester Exam., 2020  
held in July, 2021**

ZOOLOGY  
( Honours )

( 3rd Semester )

Course No. : ZOOH-302

( **Biotechnology and Biostatistics** )

Full Marks : 35  
Pass Marks : 12

Time : 2 hours

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

Answer **five** questions, taking **one** from each Unit

UNIT—I

1. (a) What are the various types of chromatography used in biochemical studies? 2  
(b) Write in detail about paper chromatography. 5
2. (a) Define calorimetry. 1  
(b) Describe the working principle and practical utility of spectrophotometer. 6

UNIT—II

3. (a) What is the basic difference between light microscopy and electron microscopy? 1  
(b) Discuss the principles of phase contrast microscope. 4  
(c) What are its advantages and disadvantages? 2
4. (a) Why are fixation and staining done for biological materials? 1  
(b) Discuss the general properties of chemical fixatives and add four common fixatives used in biological studies. 4+2=6

UNIT—III

5. (a) Differentiate between primary culture and subculture. 2  
(b) Describe commonly used techniques of primary cell culture. 5
6. (a) What are the routes of contamination in a tissue culture laboratory? 2  
(b) Give an account of sterilization techniques adopted in a laboratory. 5

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UNIT—IV

7. (a) Write briefly cell line and its maintenance. 5  
(b) Add a note on apoptosis. 2
8. (a) What is meant by 'scale-up' in context to cell culture? 1  
(b) Discuss different cell culture processes and the growth patterns of cells under culture. 6

UNIT—V

9. (a) Define mode and standard deviation. 1+1=2  
(b) The diameters of certain trees have been found to be as follows :  
6.42, 7.05, 7.85, 8.16, 5.43, 6.23, 6.93, 8.01, 5.75 and 7.31  
Calculate the standard deviation from the above data. 5
10. Write short notes on any *two* of the following :  $3\frac{1}{2} \times 2 = 7$   
(a) Regression analysis

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- (b) Correlation coefficient  
(c) Significance of value of standard error in statistical analysis  
(d) Concept of mean and median

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