

**2023**  
**M.Sc.**  
**Third Semester**  
 CORE – 10  
**ZOOLOGY**  
*Course Code: MZOC 3.21*  
 (Techniques in Biology)

*Total Mark: 70*  
*Time: 3 hours*

*Pass Mark: 28*

*Answer five questions, taking one from each unit.*

**UNIT-I**

1. What is spectrophotometry? Explain the different essential components of the instrumentation and its application. 2+10+2=14
2. Write notes on the following: 7+7=14
  - (a) Radioimmunoassay (RIAS)
  - (b) Enzyme linked immunosorbent assay (ELISA)

**UNIT-II**

3. Give a comparative account on northern and western blotting. 7+7=14
4. Write notes on the following: 7×2=14
  - (a) High performance liquid chromatography (HPLC)
  - (b) Isoelectrophoresis

**UNIT-III**

5. (a) What are the different measures designed to calculate central tendency? 7
- (b) Calculate the medium value of the following variables on the basis of the following simple frequency distribution. 7

Variables ( <i>X</i> )	1	2	3	4	5	6	7
Frequency ( <i>f</i> )	1	4	12	9	2	1	1

6. (a) What is variation? Explain the merits of range and quartile deviation.

$$1+3+3=7$$

(b) Find out the quartile deviation from the following data:

$$7$$

8	12	13	9	11	17	23	25	20	21	27
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#### UNIT-IV

7. The yield of three varieties of wheat (A, B, C) in four separated fields is shown in the following table. Test the significance of difference in the yields of three varieties of wheat.

$$14$$

Wheat	Fields			
Variety	Field 1	Field 2	Field 3	Field 4
A	12	18	14	16
B	19	17	15	13
C	14	16	18	20

8. Write notes on the following:

$$7 \times 2 = 14$$

(a) Linear regression

(b) Chi-square test

#### UNIT-V

9. Discuss the databases of EBI and DDBJ.

$$7+7=14$$

10. Write notes on the following:

$$7 \times 2 = 14$$

(a) Database submission

(b) Information retrieval