

Zoology (P.G.)

[CBCS]

M.Sc. First Semester End Examination-2023

(Regular & Supplementary Paper)

PAPER-103

Full Marks: 40

Time: 02 Hrs

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Group 103.1

Full Marks 20

[Immunology and Methods in Biology]

1. **Answer any two questions of the following:** **2x2= 4**
 - a. What are epitope and paratope?
 - b. Write down the functions of interleukin.
 - c. What do you mean by active and passive immunity?
 - d. What is class switch?

 2. **Answer any two questions of the following:** **2x4= 8**
 - a. What is sandwich ELISA. Write its application. 4
 - b. Write the enzymatic action of pepsin and papain. 4
 - c. Write difference between cell mediated and humoral immune response. 4
 - d. Draw a labeled diagram of an unit antibody structure. 4
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(2)

3. Answer any one question of the following: $1 \times 8 = 8$
- What do you know about complement system? Write its types and describe any one of them. What is MAC? $1+1+5+1$
 - Write down the difference between antigenicity and immunogenicity. Write short note on hapten and adjuvant. $4+2+2$

Group 103.2

Full Marks 20

[Methods of Biology]

4. Answer any two questions of the following: $2 \times 2 = 4$
- State the importance of T_m value in PCR.
 - Differentiate between Type I, II and III of restriction endonuclease.
 - Differentiate between rate zonal centrifugation isopycnic centrifugation.
 - Write a note on homopolymer tailing.
5. Answer any two questions of the following: $2 \times 4 = 8$
- What do you mean by phytoremediation? Mention its type.
 - Describe briefly the method of SDS-PAGE using a flow chart.
 - Discuss the cell fractionation method.
 - Differentiate between cloning and expression vectors? What do you mean by blue white screen test.

(3)

6. Answer any one question of the following: $1 \times 8 = 8$
- What is biotechnology? Comment on the scopes of biotechnology in environmental science. What is bioremediation? Discuss in brief the insitu and ex-situ bioremediation. $2+2+4$
 - Write the principle of flow-cytometry. Write the application of western blotting hybridization. Write a note on ultra centrifugation. $3+2+3$