

Roll No. : .....

Total No. of Questions : 11 ]

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# **BFMS-417**

**M.Sc. (Final) Examination, 2023**

**ZOOLOGY**

Paper - VIII (a)

**(Cell Biology)**

*Time : 3 Hours ]*

*[ Maximum Marks : 75*

**Section-A**

**(Marks : 2 × 10 = 20)**

*Note :-* Answer all *ten* questions (Answer limit **50** words). Each question carries **2** marks.

**Section-B**

**(Marks : 5 × 5 = 25)**

*Note :-* Answer all *five* questions. Each question has internal choice (Answer limit **200** words). Each question carries **5** marks.

**Section-C**

**(Marks : 10 × 3 = 30)**

*Note :-* Answer any *three* questions out of five (Answer limit **500** words). Each question carries **10** marks.

**Section-A**

1. (i) What is primary cell line ?
- (ii) What are the key differences between cells grown in monolayer cultures versus suspension cultures ?

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- (iii) What is the principle of fixation ?
- (iv) What happens if alkaline phosphatase is high in liver ?
- (v) What are the different types of interference microscopy ?
- (vi) What are toll-like receptors ?
- (vii) How does the immune system react to tuberculosis ?
- (viii) How does ionizing radiation cause DNA damage in cells ?
- (ix) Define linkage disequilibrium.
- (x) What are the different steps involved in a freeze-drying procedure ?

**Section-B**

2. Define organ culture and how is it used in biomedical research ?

*Or*

Briefly explain some commonly used natural media for tissue culture, and write their advantages over synthetic media.

3. Explain the principle and applications of metachromasia staining technique.

*Or*

What are the different types of supra vital stains, and how do they differ in their application ?

4. How can ultraviolet microscopy be used for materials analysis and characterization ?

*Or*

How are electron microscopes able to achieve much higher magnifications than light microscopes ?

5. What are the different components of the complement system and how do they interact with each other ?

*Or*

Explain autoimmunity and how does it differ from other immune responses ?

6. Describe the different types of cellular damage associated with aging.

*Or*

What is a cytogenetic map and how is it used in genetic research ?

### **Section–C**

7. Write in detail the method and importance of cloning.
8. Explain the role and mechanism of enzyme succinate dehydrogenase.
9. What is a phase contrast microscope, and how does it work ? What are the advantages of using a phase contrast microscope over a traditional bright-field microscope ?
10. What is the difference between humoral and cell-mediated immune responses, and how do they work together to protect the body from pathogens and foreign substances ?
11. What is AIDS (Acquired Immune Deficiency Syndrome), and how does it affect the body's immune system ?