

Roll No. : .....

Total No. of Questions : 11 ]

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# **BPG-1114**

**M.Sc. (Previous) Examination, 2021**

**BIOTECHNOLOGY**

Paper-III

**(Concepts of Microbiology and Immunology)**

*Time : 1½ 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**

2 each

1. (i) What do you mean by resolving power of a Microscope ? How is it related to numerical aperture ?
- (ii) Differentiate between blue green algae and fungi.
- (iii) What do you mean by Selective Media ? Give *two* examples.

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- (iv) What is Serial dilution ? Why is it important ?
- (v) Define Lichen. What type of interaction exists between the members of Lichen ?
- (vi) Name two bacteria :
  - (a) Present in sewage
  - (b) Responsible for food poisoning
- (vii) Write *two* characteristic features of green ear disease.
- (viii) Name *two* DNA and RNA viruses.
- (ix) Define MHC restriction.
- (x) What do you understand by Antibody dependent cell mediated cytotoxicity and opsonization ?

**Section–B**

5 each

2. Describe phase contrast Microscopy.

*Or*

Explain in short :

- (a) Contribution of Louis Pasteur in the field of Microbiology.
  - (b) Distinctive features of Gram positive bacteria
3. What is Peptidoglycan ? Explain structure of cell wall of Gram positive bacteria.

*Or*

Write a note on different types of microbiological growth media. Add a note on pure culture techniques.

4. Describe role of microorganisms in Nitrogen cycle.

*Or*

Write a note on airborne diseases and their control.

5. Write short notes on the following :
- (a) Smallpox
  - (b) AIDS

*Or*

Write short notes on the following :

- (a) Tuberculosis
  - (b) Citrus canker
6. Explain structure of IgG. Add a note on types of antigens.

*Or*

Explain classical pathway of complement.

**Section–C**

10 each

- 7. Write a detailed note on Electron Microscopy.
- 8. Explain the following :
  - (a) Methods of sterilization
  - (b) Structure of a bacterium
- 9. Write an explanatory note on microbiology of food.
- 10. What do you mean by Plaque assay ? Explain methods of virus isolation, cultivation and purification.
- 11. Describe the following :
  - (a) Lymphocytes
  - (b) Innate Immunity