



**WEST BENGAL STATE UNIVERSITY**

B.Sc. Honours Part-II Examination, 2019

**MICROBIOLOGY**

**PAPER: MCBA-IV**

Time Allotted: 2 Hours

Full Marks: 50

*The figures in the margin indicate full marks.  
Candidates should answer in their own words and adhere to the word limit as practicable.*

**Answer Question. No. 1 and any *four* questions from the rest**

1. Answer any *five* questions from the following: 2×5 = 10
  - (a) What do you mean by xenobiotics?
  - (b) What do you mean by droplet nuclei?
  - (c) State the merits and demerits of using sodium benzoate as preservative of food.
  - (d) Describe the role of alternative nitrogenase.
  - (e) State the importance of humus.
  - (f) How does osmotic pressure helps in the preservation of food?
  - (g) Oxygen inhibits nitrogen fixation. Explain.
  - (h) What are bioaerosols?
  
2. (a) Why coliforms are used as indicator of water potability? 2×5 = 10
  - (b) Will addition of organic matter to a water sample increase or decrease its B.O.D? Explain your answer.
  - (c) Why *E.coli* gives negative result for Voges-Proskauer test?
  - (d) Why presumptive test is followed by confirmed test?
  - (e) Describe aseptic packaging.
  
3. (a) Mention the first step of nitrification indicating the product and enzyme involved. 2×5 = 10
  - (b) Mention the role of leghaemoglobin in nitrogen fixation.
  - (c) How nif gene is regulated in the presence of excess ammonia?
  - (d) What is nif HDK?
  - (e) Describe aseptic packaging.

4. (a) Describe, in brief, the reactions that occur in anaerobic sludge digester. 2×5 = 10  
(b) Describe, in brief, the reactions that occur in cellulose decomposition to carbon dioxide.  
(c) Describe briefly how Winogradsky column can be prepared.  
(d) What is ropiness? Name the organism responsible for ropiness.  
(e) What is radappertization?
5. (a) What do you mean by cold sterilization? 2×5 = 10  
(b) Why blanching is done before freezing the food?  
(c) Why continuous freezing and thawing of fish or meat is not recommended? Give its biochemical basis.  
(d) Stored grains are easily spoiled by molds. Explain why.  
(e) How tinned food is spoiled?
6. (a) What is the biochemical basis of milk curdling? 2×5 = 10  
(b) What is Flash Pasteurization?  
(c) Discuss, in brief, the merits and demerits of using nitrite for storage of prepared meat.  
(d) What is commensalism? Give suitable example.  
(e) State the importance of VAM.
7. (a) Why is air not the natural habitat for microbes? 2×5 = 10  
(b) What do you mean by bioremediation?  
(c) Mention the advantages and disadvantages of bioremediation.  
(d) Describe, in brief, the effect of ultraviolet radiation on organism in air.  
(e) Describe, in brief, how air sampling is performed.
8. Write short notes on any **four** of the following:  $2\frac{1}{2} \times 4 = 10$   
(a) SCP  
(b) Trickling filter  
(c) Salt as an effective food preservative  
(d) Shefna protein  
(e) Rancidity of food.

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