

**Microbiology (P.G.)**

**[CBCS]**

**M.Sc. Third Semester End Examination-2023**

**(Regular & Supplementary Paper)**

**PAPER-303**

**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 A (MCB-303.1)**

**Full Marks 20**

**Fundamentals and Application of Food Microbiology**

- 1. Answer any two questions of the following:                      2x2= 4**
- a. Mention the name of two microorganisms that are able to survive at  $-9^{\circ}\text{C}$  to  $17^{\circ}\text{C}$ . What is xerophile.                      1+1
- b. What are the alternatives of sodium benzoate in preservation of food products?
- c. Explain the steps of an outbreak investigation.
- d. Give Example of for class-1 preservatives?

(2)

- 2. Answer any two questions of the following: 2x4= 8**
- a. What are the basic approaches available to reduce the rate or inhibit microbial food spoilage?
  - b. Define food poisoning and food infection.
  - c. How moisture content and water activity both are important to maintain food quality and safety?
  - d. Mention the role of HACCP and FSSAI in food safety.

- 3. Answer any one question of the following: 1x8=8**
- a. Discuss the mycotoxins and bacterial toxins in food and their impact on human health. What is the favorable condition for mycotoxin producer. 5+3
  - b. What are difference between foodborne infection and food borne intoxication? Describe how prions accumulate in nervous tissue and the appearance of the brain that has been infected with prions? Mention the role of FDA on acrylamide in food. 3+3+2

**Group B (MCB- 303.2)**

**Full Marks 20**

- 1. Answer any two questions of the following: 2x2= 4**
- a) Write down the character of microorganism used for the production of SCP.
  - b) Write down the difference between homofermentative and heterofermentative lactic acid bacteria. 2

(3)

- c) What is kefir “grains”? Mention the name of microorganism involved inKefir production. 1+1
- d) Mention four health benefits of Spirulina. 2

- 2. Answer any two questions of the following: 2x4= 8**
- a) Write a short note on Synbiotics.
  - b) Mention the health benefits of Ontjom
  - c) Write a short note on genetic modification in golden rice production.
  - d) Write the limitations of using natural food colour. Give the schematic diagram for extraction of Curcumin. 2+2

- 3. Answer any one question of the following: 1x8=8**
- a) What are the advantages of short composting over long composting method in mushroom cultivation? Describe in brief the acetic acid production through German or trickling method with appropriate schematic diagram. 4+2+2
  - b) Mention what will happen if salt concentration is less than 2% and greater than 3% in Sauerkraut production? Classify Miso on the basis of raw material used for production. Mention the name of microorganisms involved in Miso production. Briefly describe the Saurkraut fermentation process. 2+1+1+4