**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BENGALURU -27**

Registration Number:

Date & Session

**B. Sc (MICROBIOLOGY) –6th SEMESTER**

**SEMESTER EXAMINATION: APRIL 2024**

**(Examination conducted in May /June 2024)**

**MB 6221: INDUSTRIAL MICROBIOLOGY AND BIOPROCESS TECHNOLOGY**

**(For current batch students only)**

**Time: 2 Hours Max Marks: 60**

**This paper contains 2 printed pages and 4 parts**

**I. Answer any Five of the following 5 x 3 = 15**

1. Differentiate primary and secondary metabolites with two examples.

2. Draw radiant streaking method and mention its significance.

3. Differentiate SSF and SMF.

4. Mention the applications of citric acid.

5. What are the three stages of production of acetone/butanol and mention the uniqueness involved in each of the stages?

6. State the principle of rotary vacuum filters.

7. Draw and label a spray drier.

**II. Answer any Five of the following 5 x 6 = 30**

8. Write the principle and procedure of lyophilization method.

9. Draw a flow chart of penicillin production and recovery process.

10. Discuss the different types of carbon sources used in fermentation process.

11. Diagrammatically differentiate batch, continuous and Plug Flow Reactor.

12. List the applications of yeast biomass.

13. Comment on the importance of Quality control in an industry.

14. Write a short note on foam separation methods.

**III. Answer any One of the following 1 x 10 = 10**

15. a. Draw and explain protoplast fusion technology. **(5 marks)**

 b. Comment on WIPO and WTO. **(5 marks)**

16. Explain the principle, procedure and applications of immobilization technique.

**IV. Answer the following 1 x 5 = 5**

17. You are planning to have a startup company that will produce a special type of masala prepared from spices grown and harvested from a specific geographic location. Give an outline involved in planning, manufacturing, packaging and marketing your product as a unique product that no one else can claim as theirs.