

B.Sc. Semester-V Examination, 2022-23**MICROBIOLOGY [Honours]**

Course ID : 52211 Course Code : SH/MCB/501/C-11

Course Title : Industrial Microbiology

Time : 1 Hour 15 Minutes Full Marks : 25

*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*1. Answer any **five** of the following questions:

1×5=5

- a) Define Industrial Microbiology.
- b) What is corn-steep liquor?
- c) Name the precursor for penicillin production.
- d) What is fed-batch fermentation?
- e) Define the term "Brewing".
- f) Why Sparger is so important in aerobic bioreactor?
- g) How foaming can be controlled during fermentation?
- h) Define synthetic media.

2. Answer any **two** of the following questions:

5×2=10

- a) What are selective and crude media? Write the methods of strain improvement. 2+3=5
- b) What is stock culture? Why preservation of industrial production strains are so important? 1+4=5
- c) How citric acid could be produced industrially? Name the industrial producer microorganism for citric acid. 4+1=5
- d) Write short notes on any **one** of the following: 5×1=5
 - i) Type of bioreactors
 - ii) Enzyme immobilization

3. Answer any **one** of the following question:

10×1=10

- a) What is down-stream processing? Write down its importance in industrial production. What factors should be kept in mind during extraction and purification of a microbial product? What is foam-fractionation? 2+3+3+2=10
- b) Draw a typical aerobic submerged fermenter and label each part. Why pilot-scale fermenter is important for industrial production? 3+5+2=10