

U.G. 5th Semester Examination - 2022**BOTANY****[HONOURS]****Discipline Specific Elective (DSE)****Course Code : BOTH-DSE-T-01B****(Industrial and Environmental Microbiology)**

Full Marks : 40

Time : $2\frac{1}{2}$ Hours*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: $2 \times 5 = 10$
- a) What is Sparger?
 - b) What is Neuberg's Fermentation?
 - c) What are Top yeast and Bottom yeast?
 - d) Define COD.
 - e) What is procain penicillin?
 - f) What is meant by immobilized enzyme?
 - g) What is Shepherd's Crook?
 - h) What is cider vinegar?

[Turn Over]

2. Answer any two of the following : $5 \times 2 = 10$

- a) Differentiate between batch fermentation and continuous fermentation.
- b) State the advantages and disadvantages of enzyme immobilization.
- c) Describe the different methods of bioremediation of contaminated soil.
- d) What is Downstream processing? How it differs from Upstream processing?

3. Answer any two of the following : $10 \times 2 = 20$

- a) Describe the process of isolation of root nodulating bacteria. What are bacteroides?
- b) Draw and label the different components of a typical bioreactor. Add a note on Tower Fermentor.
- c) Describe the process of determination of organic carbon in the water sample. What is activated sludge process?
- d) Write short notes on :
 - i) Winogradsky Column
 - ii) Biological Nitrogen fixation