

ParvatibaiChowgule College of Arts and Science
Autonomous

B.Sc. Semester End Examination, January/February 2022

Semester: V

Subject: Biochemistry

Title: Industrial Microbiology (Elective)

Duration: 2 Hours

Max. Marks: 45

Instructions: 1. All the questions are compulsory; an internal choice is available.
2. Figures to the right indicate maximum marks to the question.
3. Draw neatly labelled diagrams wherever necessary.

Q. 1. Answer ANY THREE of the following:

(09)

- a) Describe Bubble Column Reactors.
- b) State the Difference between Crude and Synthetic Media.
- c) What are the characteristics of an Ideal Fermentor?
- d) What is the significance of Antifoam and Headspace in a bioreactor.

Q. 2. Answer ANY TWO of the following:

(12)

- a) State the Differences between Solid State Fermentation and Submerged Fermentation.
- b) Explain Continuous fermentation with the help of a diagram.
- c) Write a note on Indicator dye method.

Q. 3. Answer ANY TWO of the following:

(12)

- a) Write a note on the types of diffusion assays.
- b) What are SCPs? List the microorganisms and substrate used for the production of SCP
- c) Explain Titration and gravimetric assay.

Q. 4. Answer ANY ONE of the following:

(12)

A) Production of a microbial metabolite requires the following parameters/conditions

- high levels of oxygen (aerobic fermentation)
- constant stirring
- temperature at 39°C
- pH of 5.5

- i. List the parts that would ideally be required in a bioreactor to carry out such a fermentation process? Justify by stating its functions.
- ii. Draw a neat labelled diagram of a bioreactor design that would suit the above process.