



'समानो मन्त्रः समितिः समानी'

UNIVERSITY OF NORTH BENGAL
B.Sc. Honours 5th Semester Examination, 2022

CC11-MICROBIOLOGY

INDUSTRIAL MICROBIOLOGY

Time Allotted: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

1. Answer any **five** questions: 1×5 = 5
 - (a) What are impellers?
 - (b) Write down the full form of ATCC.
 - (c) What is the use of tray fermenter?
 - (d) What do you mean by synthetic media?
 - (e) Name an organism used for industrial production of amylase.
 - (f) What is malting?
 - (g) Define strain improvement.
 - (h) What is the advantage of enzyme immobilization?

2. Answer any **three** questions: 5×3 = 15
 - (a) Compare and contrast submerged fermentation and solid state fermentation. 5
 - (b) What is enzyme encapsulation? How is dissolved oxygen and temperature controlled in a fermentation process? 1+4
 - (c) Name a microorganism used during the industrial production of ethanol. How is cell disruption an important step during downstream processing? 1+4
 - (d) Discuss the important factors used for the selection of industrially important strains. 5
 - (e) Write a brief note on large scale application of immobilized enzymes. 5

3. Answer any **two** questions: 10×2 = 20
 - (a) Give a brief description of recovery of citric acid after commercial production. With the help of a well labelled diagram explain air-lift fermenters. 5+5
 - (b) Describe the media composition, fermentation conditions and uses of the production of wine. Also mention the name of the fermentating microorganism involved. 8+2
 - (c) Discuss with the help of example how centrifugation and precipitation help in downstream processing of fermented industrial products. 5+5
 - (d) Write a note on the use of various components for the preparation of crude and synthetic media. 5+5

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