



WEST BENGAL STATE UNIVERSITY
B.Sc. Honours 5th Semester Examination, 2021-22

BOTADSE03T-BOTANY (DSE1/2)

INDUSTRIAL AND ENVIRONMENTAL MICROBIOLOGY

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate marks of question.
Candidates should answer in their own words and adhere to the word limit as practicable.*

1. Answer **all** questions briefly from the following: 1×16 = 16
- (a) Name one antifoam agent.
 - (b) Name the enzyme associated with development of semi synthetic penicillin.
 - (c) Define eutrophication.
 - (d) Name one ammonifying bacterium.
 - (e) Write a difference between α -amylase & β -amylase.
 - (f) What is secondary metabolite?
 - (g) Write the name of an enzyme which is use to break the fungal cell wall in laboratory.
 - (h) What is microbial plastic? Give an example.
 - (i) Name one flavouring agent.
 - (j) Write an advantage of air lift fermenter.
 - (k) Define upstream process in industrial fermentation.
 - (l) Write the name of a bacteria which grow only on hydrocarbons.
 - (m) Write the name of an instrument which is use to break the cells in industry.
 - (n) Define bioaerosol.
 - (o) What is salting out of protein?
 - (p) What is PHA?
2. Answer any **eight** questions from the following: 3×8 = 24
- (a) Write the steps involved in the formation of root nodule in leguminous root. 3
 - (b) Write in brief the methods of enzyme immobilization. 3
 - (c) Write the main principles of fixed bed and fluidized bed bioreactor. 3
 - (d) Describe the recovery process of ethanol and penicillin. 3
 - (e) Compare batch and continuous fermentation. What is diauxic growth? 2+1

- (f) Write the benefit of mycorrhiza in agriculture. 3
- (g) Describe the process of sewage waste water treatment. 3
- (h) How water quality can be checked by faecal coliform? 3
- (i) Draw the growth curves of bacteria in batch and continuous fermentations. 3
- (j) Describe the roles of microbes in medical microbiology. 3
- (k) Describe different parts of constantly stirred tank bioreactor. 3
- (l) Draw a flowchart for purification of an extracellular enzyme. 3

N.B. : *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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