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R – 1498

Reg. No. :

Name :

Sixth Semester B.Sc. Degree Examination, April 2023
Career Related First Degree Programme under CBCSS

Botany and Biotechnology

Vocational Course

BB 1671 : INDUSTRIAL BIOTECHNOLOGY

(2019 Admission Onwards)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions in a **word** or one of **two** sentences.

1. Name a biotech firm that produce COVID vaccine in India.
2. What is known as a producer strain?
3. Define glycolysis.
4. What is submerged fermentation?
5. What is the function of a baffle in a fermenter?
6. Why we need sterilization of the media before culture?
7. What is the function of chemostat in microbial growth?
8. Name any one physical method for the separation of fermentation products.

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9. Which agricultural waste is commonly used in India for the production of ethanol?
10. What is brewing?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions. Answer not to exceed **one** paragraph.

11. Write a note on various biotechnology related industries in India.
12. Name two primary screening techniques for the industrially important microbes.
13. Which type of fermentation results in the end product vinegar? Name an organism used for it.
14. Write the advantages of continuous stirred bioreactors.
15. What does fermentation medium basically consist of?
16. How does pH affect fermentation?
17. Which method is used for extraction of ethanol after fermentation and how?
18. What is single cell protein? Name an algae used for its production.
19. What is bacterial amylase used for?
20. Explain solid state fermentation.
21. What are the major sterilization methods of fermentation media?
22. Brief on the microbial production of protease.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. Answer not to exceed **half** page.

23. Explain the desirable characteristics of an industrially important microorganism.
24. Write a note on the different types of bioreactors.

25. Differentiate between batch fermentation and continuous fermentation.
26. What are the advantages and disadvantages of solid state fermentation?
27. How do you immobilize enzymes? What are its advantages and applications?
28. How penicillin is being produced by microorganisms?
29. Write a note on the microbial production of VitB₁₂.
30. What are the ideal characteristics of media for industrial fermentation? Explain the ideal physical parameters for microbial growth.
31. Write a note on the microbial production of beer and wine.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. Answer not to exceed **three** pages.

32. What happens during fermentation process? Elaborate on the various stages involved in the process of alcohol fermentation.
33. Elaborate on the microbial production of Glutamic acid and Citric acid.
34. Explain the sequential steps involved in downstream processing the fermentation product recovery.
35. With the help of a diagram explain the essential parts of a typical bioreactor and mention the function.

(2 × 15 = 30 Marks)