

Reg. No. :

Name :

**Sixth Semester B.Sc. Degree Examination, April 2016
(Career Related First Degree Programme under CBCSS)**

Group – 2(a) : BOTANY AND BIOTECHNOLOGY

Vocational Course – XII

**BB 1671 : Industrial Biotechnology
(2013 Admission)**

Time : 3 Hours

Max. Marks : 80

Instruction : Draw diagrams *wherever* necessary.

SECTION – A

I. Answer **all** questions in **one** word to **two** sentences. **Each** question carries 1 mark.

- 1) Mention the source of penicillin.
 - 2) Name two amino acids used in food industry.
 - 3) What is alcoholic fermentation ?
 - 4) What are mycotoxins ?
 - 5) What is broth ?
 - 6) Scale up process.
 - 7) Starter culture.
 - 8) What are inducers ? Give an example.
 - 9) Define Pascalization.
 - 10) What is spawn ?
- (10×1=10 Marks)**



SECTION - B

II. Answer **any eight** questions; **not to exceed a paragraph**. Each question carries **two marks**.

- 11) Name the major organic acids produced by microbial process and the microorganisms used.
- 12) What are the various types of fermentation ?
- 13) What are secondary metabolites ? Name a secondary metabolite produced by fungi.
- 14) Bioinsecticides and their use.
- 15) Mention the enzymes in cheese production.
- 16) What are trickling filters ?
- 17) Define asepsis. Mention its advantages.
- 18) How does the nutrient content affect microbial growth in food ?
- 19) What is brewing ? Mention the steps involved.
- 20) Give an account of the chemical preservatives.
- 21) Explain chemostat culture.
- 22) What are fermented foods ?

(8×2=16 Marks)

SECTION - C

III. Answer **any six** questions, **not to exceed 120 words**. Each question carries **four marks**.

- 23) Give an account of upstream processing.
- 24) Aeration of fermentation media.
- 25) What is batch fermentation ? Mention its applications.
- 26) What are the major components of the growth media used in fermentation ?
- 27) Describe the role of microbes in confectionaries.



- 28) Give an account of animal cell culture media.
- 29) How is canned food spoiled ? How is it manifested ?
- 30) Name some important industrial microbial enzymes and their source.
- 31) Give an account of the production of SCP.

(6×4=24 Marks)

SECTION - D

IV. Write essay on **any two** of the following, **not more than three pages**. Each question carries **15 marks**.

- 32) Explain the importance of agricultural wastes and food industry waste as substrates for fermentation. Add a note on solid substrate fermentation.
- 33) What is a bioreactor ? Give an account of the various types of bioreactors with the help of diagrams.
- 34) Give an account of downstream processing. What are the separation methods in downstream processing ?
- 35) Give an account of the microbes of dairy industry. Add a note on the various milk products.

(2×15=30 Marks)



Reg. No. :

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**Sixth Semester B.Sc. Degree Examination, April 2018
(Career Related First Degree Programme under CBCSS)**

**Group 2(a) : Botany and Biotechnology
Vocational Course – XII**

**BB 1671 : Industrial Biotechnology
(2013 and 2014 Admission Onwards)**

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions in a word or **one** or **two** sentences. **Each** question carries **one** mark. **(1×10=10 Marks)**

1. What is aflatoxin ?
2. Mention the reason of curdling of milk.
3. Define doubling time.
4. What is the principle of dry heat sterilisation ?
5. What is filtration ?
6. What is scale up ?
7. State the purpose of adding indicator in the medium.
8. What is idiophase ?
9. Name the fungal sp. which is used for industrial production of penicillin.
10. State the use of 70% alcohol in a lab.

SECTION – B

Answer **any 8** questions. **Each** question carries **2** marks. Answer **not** to exceed **one** paragraph. **(2×8=16 Marks)**

11. Differentiate between hard cheese and soft cheese.
12. Expand HTST. What is its significance ?
13. What is fed batch culture ?
14. What is selective medium ?
15. What is a suspension culture ?

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16. What is molasses ?
17. Define fermentation. How it is different from respiration ?
18. Mention any four advantages of probiotics.
19. How immobilisation of enzymes is helpful in storage and processes ?
20. What is paneer ? How it is prepared ?
21. What is a sparger ?
22. What is bubble column reactor ?

SECTION - C

Answer **any 6** questions. **Each** question carries **4** marks. Answer should not exceed **120** words. **(4x6=24 Marks)**

23. Explain sterilisation methods used in bioprocesses.
24. What is CSTR ?
25. Describe the use of microbes in confectionary industry ?
26. How protoplast fusion is done ?
27. How site directed mutagenesis is useful in strain improvement ?
28. Compare solid state and submerged fermentation.
29. How fermentors are employed in plant cell culture ?
30. Explain the features of batch fermentation.
31. Describe the microbial production of vitamin B.

SECTION - D

Answer **any 2** questions. **Each** question carries **15** marks. Answer not to exceed **3** pages. **(2x15=30 Marks)**

32. Explain industrial production of enzymes.
 33. Describe the production of single cell proteins.
 34. Write notes on :
 - A) Fermentation media
 - B) Dairy products.
 35. Describe the steps of cheese production
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Reg. No. :

Name :

Sixth Semester B.Sc. Degree Examination, April 2013
(Restructured Course)
Branch : Biotechnology
Vocational Subject : Biotechnology
Paper – XII : INDUSTRIAL BIOTECHNOLOGY
(2008 Admission)

Time : 3 Hours

Max. Marks : 60

I. Answer **any ten** of the following :

- 1) What is HEPA filter ?
- 2) What are antifoam agent ?
- 3) What are batch cultures and continuous cultures ?
- 4) What is Chemostat ?
- 5) What is EMP path way ?
- 6) What is SCP ?
- 7) What are impellers ?
- 8) What is ropiness ?
- 9) What are the different types of milk marketed ?
- 10) Differentiate Sterilization and Pasteurization ?
- 11) What is starter culture ?
- 12) What is bioreactor ?
- 13) What are fermenters ?
- 14) What is HTST method ?
- 15) What is meant by 'Canning' ?

(10×2=20 Marks)



II. Answer **any five** of the following :

- 16) Write notes on fermentation using immobilized cells.
- 17) Explain microbial production of enzymes.
- 18) What are mycotoxins and its action ?
- 19) Write notes on fermented foods.
- 20) Compare and contrast submerged and solid state fermentation.
- 21) Write notes on cheese production.
- 22) What are advantages and disadvantages of pasteurization ?
- 23) Briefly explain the role of enzymes in food processing. (5×4=20 Marks)

III. Answer **any two** of the following :

- 24) Explain the various microorganisms involved in food spoilage. Add notes on different types of spoilage and preservation techniques.
 - 25) Give a detailed account of dairy industry. Write notes on important microorganisms used and important dairy products.
 - 26) Write an essay on industrial production of alcohol.
 - 27) Give an account of different physical and chemical methods for separation of fermentation products. (2×10=20 Marks)
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**Sixth Semester B.Sc. Degree Examination, April 2014
(Career Related First Degree Programme Under CBCSS)
Core Course XI – BB 1642/BV 1641.1: Economic Botany,
Ethnobotany and Medicinal Botany
(Common for Group 2 (a) : Botany and Biotechnology and
Group 2 (b) : Biotechnology)**

Time : 3 Hours

Max. Weights :30

Instruction : Draw diagrams *wherever necessary*.

SECTION – A

Answer **all** questions. (Each bunch of **four** questions carries a weightage of 1).

(Weightage 1×4=4)

Choose the correct answer.

1. Pineapple belongs to the family

- | | |
|-----------------|------------------|
| a) Moraceae | b) Rosaceae |
| c) Bromiliaceae | d) Euphorbiaceae |

2. Morphology of useful part of cashew apple is

- | | |
|---------------|----------------------|
| a) Thalamus | b) Pedicel |
| c) Flower bud | d) None of the above |

3. Botanical name of brinjal is

- | | |
|-----------------------------|--------------------------------|
| a) <u>Solanum melongena</u> | b) <u>Solanum mammosum</u> |
| c) <u>Solanum torvum</u> | d) <u>Solanum xanthocarpum</u> |

4. Tapioca is modification of

- | | |
|------------------------------|------------|
| a) Corm | b) Rhizome |
| c) Tuberous and fibrous root | d) Bulb |



Answer in **one word or one sentence**.

5. Caffein
6. Ethnobotany
7. Adulteration of drugs
8. Expand IMPB.

State **true or false**.

9. Sword beam belongs to the family cucurbitaceae.
10. Cotton fiber is an example of phloem fiber.
11. Tapioca is a rich source of starch.
12. Adhatoda is used for treating Asthma.

Fill in the blanks.

13. Neem cake is used as _____
14. Vernacular name of *Andrographis paniculate* is _____
15. Botanical name of Ragi is _____
16. Apple belongs to the family _____

SECTION – B

Answer **any eight** questions giving **any four major points**. (Each question carries a weightage of 1) **(Weightage 1×8=8)**

17. Give the binomial, family and morphology of the useful parts of pepper and cardamom.
18. Write the methods of extracting oil from sesame.
19. Briefly describe the significance of ethnobotany.



20. Describe briefly dry system of rice production.
21. Mention the significance of preservation of sacred groves.
22. Give a brief account on the conservation of medicinal plants.
23. Compare and contrast ancient and modern medicines.
24. Define pharmacognosy. What is its significance ?
25. Name two hybrid varieties each of coconut and rice.
26. Give the medicinal importance of *Adhatoda vasica*.
27. Name two crude drugs each obtained from rhizome and corn.
28. Give the medicinal importance of sarpagandha.

SECTION – C

Answer **any five** questions (not more than **one page**). **(Weightage 2×5=10)**

29. Write an account on any four wild plants used by tribes of Kerala as food.
30. Give the definitions of cash crops and plantation crops and compare both with suitable examples.
31. Write an account on any two spice crops you studied.
32. Write an account on Henna and *Bixa orellina*, with special reference to their economic significance.
33. Give an account on the need for cultivation and conservation of medicinal plants.
34. Compare and contrast the Ayurvedic and Homoeopathic treatment systems.
35. Write a brief account on the vegetable plants mentioned in the syllabus.
36. What is the role of BSI in conservation of plants with special reference to medicinal plants ?



SECTION - D

Answer any two questions (Not more than three pages). (Weightage 4x2=8)

37. Write an account on various treatment systems prevailing in India, with suitable examples.
 38. Give an account on crude drugs obtained from various plant parts. Illustrate your answer with suitable examples.
 39. Write an account on cereals and millets of India. Explain the method of cultivation of paddy and ragi.
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(Pages : 3)

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Reg. No. :

Name :

Sixth Semester B.Sc. Degree Examination, April 2022
Career Related First Degree Programme Under CBCSS

Group 2(a) – Botany and Biotechnology

BB 1671 : INDUSTRIAL BIOTECHNOLOGY

(2019 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** the questions in a word or **one** or **two** sentences. **Each** question carries **1** mark.

1. What are antifoam agents?
2. Define probiotics.
3. What is the function of baffles?
4. Name the largest biotechnology company in India.
5. What is filtration?
6. Define industrial biotechnology.
7. What is alcoholic fermentation?
8. Define bioprocess.
9. What is a selective medium?
10. Write any two agricultural waste used in fermentation.

(10 × 1 = 10 Marks)

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SECTION – B

Answer **any eight** questions. Each question carries 2 marks. (Answer not to exceed one paragraph)

11. What is enzyme immobilization?
12. Explain downstream processing in fermentation.
13. What is continuous fermentation?
14. Comment on any two biotechnology industries in India.
15. What is shelf life period?
16. Mention two industrial applications of fermentation.
17. What is chemostatic culture?
18. Which microorganisms are used for the production of vitamin B₁₂?
19. What is a starter culture?
20. Comment on diffusion bioreactor.
21. Name the microorganisms used for the production of glutamic acid.
22. Differentiate between a bioreactor and a fermentor.
23. Discuss the factors that may alter scale up during fermentation.
24. What is fed batch culture?
25. What is product recovery in fermentation?
26. Mention the use of airlift bioreactors.

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions. Each question carries 4 marks. (Answer not to exceed 120 words)

27. Brief a note on scope and applications of industrial biotechnology.
28. Write the steps in beer production.
29. Describe microbial production of butanol.

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30. Discuss different types of bioreactors.
31. What are the features of batch fermentation?
32. Comment on solid state fermentation
33. What are the applications of cell immobilisation?
34. Explain media sterilization methods used in bioprocess.
35. What are the steps in upstream processing?
36. List any four products of fermentation.
37. Differentiate between primary and secondary screening of microorganisms
38. How is a chemostat used to culture bacteria?

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions. Each question carries 15 marks. (Answer not to exceed three pages)

39. Describe the production of single cell proteins.
40. Explain industrial production of enzymes.
41. What is fermentation media? What are the characteristics of an ideal production media?
42. Discuss various methods for separation of fermented products in downstream processing.
43. What are bioreactors? Explain the design and parts of a bioreactor.
44. Explain the microbial production of Penicillin.

(2 × 15 = 30 Marks)

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