

**DEPARTMENT OF MICROBIOLOGY**  
**SANATANA DHARMA COLLEGE, ALAPPUZHA**  
**Sixth Semester Internal Examination, March 2023**

**MB 1643: Food and Dairy Microbiology**

**Time: 1 1/2Hours**

**Maximum: 40 Marks**

**I. Answer the following in one or two sentences. All questions are compulsory.**

1. Define Pasteurization.
2. Define Aflatoxin
3. Discuss Fermented vegetables.
4. Define Canning
5. Expand GRAS.

**(5×1=5)**

**II. Write a short paragraph on any four of the following;**

6. Explain botulism
7. Describe the principles of food preservation
8. State water activity.
9. Describe briefly about fermentative production of cheese.
10. Describe the standard methods of waste treatment and disposal in food industries.
11. Describe briefly about spoilage of meat and meat products.
12. Explain asepsis
13. Differentiate food additive and food preservative.

**(4×2=8)**

**III. Answer in one or two pages on any three of the following;**

14. Explain on fermented dairy products.
15. Briefly explain the spoilage of canned foods.
16. Explain about laboratory testing of food borne infections.
17. Differentiate between food intoxication and food infection.
18. Give an outline on HACCP.
19. Describe about preservation of food by drying.

**(3×4=12)**

**IV. Write essay in not less than four pages on any one of the following;**

20. Explain briefly about various methods of food preservation.
21. Give a detailed outline on factors affecting the growth of microorganisms in food.

**(1×15=15)**

**S.D. College, Alappuzha**

**Outcome Based Internal Evaluation Blue Print – 2022-23**

**Programme Name and Code:** BS.c Microbiology (345)

**Semester VI**

**Course Name and Code:** Food and Dairy Microbiology (MB 1642)

**Assignment/Seminar**

<b>Relevant Course Outcome:</b> To discuss the basis of food safety regulations and HACCP	<b>Topic:</b> Hazard analysis critical control points (HACCP)
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**Internal Question Paper – Mapping of Test Items**

<b>Course Outcomes</b>	<b>Test Items with Marks</b>
To describe the various factors affecting microbial growth and categorize the different groups of microorganisms associated with food	<ol style="list-style-type: none"> <li>1. State water activity – 2 marks (apply)</li> <li>2. Give a detailed outline on factors affecting the growth of microorganisms in food – 15 marks (remember)</li> </ol>
To explain the different sources of contamination and summarize the general principles underlying spoilage and preservation of food	<ol style="list-style-type: none"> <li>1. Define pasteurization – 1 mark (remember)</li> <li>2. Define aflatoxin. – 1 mark (remember)</li> <li>3. Describe fermented vegetables – 1 mark (apply)</li> <li>4. Define canning. – 1 mark (remember)</li> <li>5. Describe the principles of food preservation – 2 marks (remember)</li> <li>6. Describe the standard methods of waste treatment and disposal in food industries – 2 marks (apply)</li> <li>7. Briefly describe about the spoilage of meat and meat products – 2 marks (apply)</li> <li>8. Explain asepsis – 2 marks (understand)</li> <li>9. Differentiate food additives and food preservatives – 2 marks (analyse)</li> <li>10. Briefly explain the spoilage of canned foods – 4 marks (understand)</li> <li>11. Describe about preservation of food by drying- 4 marks (analyse)</li> <li>12. Explain briefly about various methods of food preservation -15 marks (understand)</li> </ol>
To understand and describe basics of dairy microbiology and describe the role of microbes in fermented products and methods for the preservation	<ol style="list-style-type: none"> <li>1. Describe briefly about fermentative production of cheese– 2 marks (remember)</li> <li>2. Explain fermented dairy products -4 marks (understand)</li> </ol>
To paraphrase food poisoning and	<ol style="list-style-type: none"> <li>1. Expand GRAS-1 mark (understand)</li> <li>2. Explain botulism – 2 marks (understand)</li> </ol>

understand the basis of food safety regulations	<ol style="list-style-type: none"><li>3. Explain about laboratory testing of food borne infections – 4 marks (understanding)</li><li>4. Differentiate between food intoxication and food borne infections- 4 marks (analyse)</li><li>5. Give an outline on HACCP- 4 marks (remember)</li></ol>
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**DEPARTMENT OF MICROBIOLOGY**  
**SANATANA DHARMA COLLEGE, ALAPPUZHA**  
**Second Semester Internal Examination, February 2023**

**MB 1221: Fundamentals of Microbiology**

**Time: 1 1/2 Hours**

**Maximum: 40 Marks**

**I. Answer the following in one or two sentences. All questions are compulsory.**

1. Define Resolving power of microscope.
2. Describe Thymine dimer.
3. Expand HEPA
4. Define atrichous bacterium? Give one example
5. Define pure culture. Cite any two pure culture methods? (5×1=5)

**II. Write a short paragraph on any four of the following;**

6. Describe about Koch postulates.
7. Differentiate Inspissation and Incineration.
8. Outline on oil immersion objective.
9. Differentiate antiseptics and Disinfectants.
10. Differentiate protoplast and spheroplast
11. Expand and explain RCM broth
12. Discuss the importance of media in microbiology
13. Explain capsule and its importance (4×2=8)

**III. Answer in one or two pages on any three of the following;**

14. Demonstrate the structure and arrangement of prokaryotic flagellum
15. Give a short outline on contributions of Louis Pasteur.
16. Illustrate cytoplasmic membrane
17. Differentiate between prokaryotes and eukaryotes.
18. Discuss on different culture techniques in microbiology and explain different streaking methods in detail
19. Describe Gram staining. (3×4=12)

**IV. Write essay in not less than four pages on any one of the following;**

20. Explain the different culture media used in microbiology
21. Discuss on methods of sterilization by heat and radiation.
22. Explain the bacterial structures internal to the cell wall (1×15=15)

**S.D. College, Alappuzha**

**Outcome Based Internal Evaluation Blue Print – 2022-23**

**Programme Name and Code:** BS.c. Microbiology (345)

**Semester:** II

**Course Name and Code:** Fundamentals of Microbiology (MB 1221)

**Assignment/Seminar**

<b>Relevant Course Outcome:</b> To recall the history of microbiology and cite the contributions of various scientists	<b>Topic:</b> Contributions of Louis Pasteur to the field of Microbiology
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**Internal Question Paper – Mapping of Test Items**

<b>Course Outcomes</b>	<b>Test Items with Marks</b>
To recall the history of microbiology and cite the contributions of various scientists	<ol style="list-style-type: none"> <li>1. Describe about Koch postulates – 2 mark (remember)</li> <li>2. Give a short outline on contributions of Louis Pasteur: – 4 marks (remember)</li> <li>3. Difference between prokaryotes and eukaryotes – 4marks (analyse)</li> </ol>
To describe and illustrate the general structural characteristics of microorganisms	<ol style="list-style-type: none"> <li>1. Define atrichous bacterium? Give one example – 1 marks (understand)</li> <li>2. Differentiate protoplast and spheroplast. – 2 marks (analyse)</li> <li>3. Explain capsule and its importance: – 2 marks (understand)</li> <li>4. Demonstrate the structure and arrangement of prokaryotic flagellum: – 4 marks (apply)</li> <li>5. Illustrate cytoplasmic membrane: – 4 marks (analyse)</li> <li>6. Explain the bacterial structures internal to the cell wall: -4 marks (understand)</li> </ol>
To explain and apply the principles of various microscopic, staining and disinfecting techniques	<ol style="list-style-type: none"> <li>1. Define resolving power of microscope? – 1 mark (remember)</li> <li>2. Describe thymine dimer – 1 mark (apply)</li> <li>3. Expand HEPA – 1 mark (understand)</li> <li>4. Differentiate Inspissation and Incineration – 2 marks (analyse)</li> <li>5. Outline on oil immersion objective: - 2 marks (remember)</li> <li>6. Differentiate antiseptics and disinfectants: -2 marks (analyse)</li> <li>7. Describe gram staining: – 4 marks (apply)</li> <li>8. Discuss on methods of sterilization by heat and radiation: -15marks (analyse)</li> </ol>
To describe and use the basic techniques of microbiology	<ol style="list-style-type: none"> <li>1. Define pure culture. Cite any two pure culture methods: -1 mark (remember)</li> <li>2. Expand and explain RCM broth: -2 marks (understanding)</li> <li>3. Discuss the importance of media in microbiology: - 2 marks (apply)</li> </ol>

	<p>4. Discuss on different culture techniques in microbiology and explain different streaking methods in details: 4 marks (apply)</p> <p>5. Explain the different culture media used in microbiology: -15 marks (understand)</p>
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**First Semester B.Sc Degree Internal Examination, December 2022**  
**Department of Microbiology**  
**Complimentary Course – Biotechnology**  
**BT 1131 – BASICS OF BIOTECHNOLOGY**

**Time: 1 ½ Hours**

**Max. Marks: 40**

**1. Answer the following in one or two sentences. All questions are compulsory**

1. Define Cohesive ends
2. What is the role of T-DNA?
3. Define fermentation
4. Define GMO
5. Define RFLP

**(5x1=5)**

**11. Write short paragraph on any four of the following:**

6. Point out the importance of DNA ligase in recombinant DNA technology
7. Distinguish between sandwich ELISA and competitive ELISA
8. Write short notes on Biofuels
9. Summarize the applications of restriction Enzymes
10. What are the disadvantages of electroporation?
11. Explain the uses of herbicide tolerant plants in agriculture
12. Name major Biotechnology institutes in India
13. Diagrammatically represent the steps in lactic acid production

**(4x2=8)**

**111. Answer in one or two pages on any three of the following:**

13. Elaborate the steps involved in the construction of Gene library
14. Explain hybridoma technology
15. Outline the advantages of cryopreservation methods
16. Give an outline of Airlift fermentation with a diagram
17. Explain the principle of agarose gel electrophoresis
19. Give examples of eukaryotic vectors with labelled diagrams

**(3x4=12)**

**IV. Write essay on any one question**

20. Differentiate between different types of DNA sequencing methods and its applications.
21. Explain the steps in isolation of DNA from plant cells.
22. Predict the future aspects of biotechnology with its commercial benefits.

**(15x1=15)**

**S.D. College, Alappuzha**

**Outcome Based Internal Evaluation Blue Print – 2022-23**

**Programme Name and Code:** B.Sc. Microbiology (345)

**Semester 1**

**Course Name and Code:** Basics of Biotechnology (BT 1131)

**Assignment/Seminar**

<b>Relevant Course Outcome:</b> Students learn and understand various techniques and applications of biotechnology.	<b>Topic:</b> Prepare 15 Power Point slides on applications of biotechnology.
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**Internal Question Paper – Mapping of Test Items**

<b>Course Outcomes</b>	<b>Test Items with Marks</b>
Learn the history of biotechnology and evolution of biotechnology to the modern era.	<ol style="list-style-type: none"><li>1. What is fermentation– 1 mark (Remember)</li><li>2. Name major Biotechnology institutes in India – 2 marks (Remember)</li><li>3. Explain hybridoma technology – 4 marks (Understand)</li></ol>
Understand the applications of biotechnology in various fields.	<ol style="list-style-type: none"><li>1. Define GMO – 1 mark (Remember)</li><li>2. Write short notes on Biofuels – 2 marks (Understand)</li><li>3. Explain the uses of herbicide tolerant plants in agriculture – 2 marks (Understand)</li><li>4. Diagrammatically represent the steps in lactic acid production– 2 marks (Analyze)</li><li>5. Give an outline of Airlift fermentation with a diagram – 4 marks (Analyze)</li><li>6. Predict the future aspects of biotechnology with its commercial benefits. – 15 marks (Apply)</li></ol>
Applications of biotechnology in rDNA technology.	<ol style="list-style-type: none"><li>1. Define Cohesive ends– 1 mark (Remember)</li><li>2. What is the role of T-DNA? – 1 mark (Understand)</li><li>3. Point out the importance of DNA ligase in recombinant DNA technology – 2 marks (Analyze)</li><li>4. Summarize the applications of restriction Enzymes– 2 marks (Understand)</li><li>5. What are the disadvantages of electroporation?– 4 marks (Understand)</li><li>6. Elaborate the steps involved in the construction of Gene library – 4 marks (Analyze)</li><li>7. Give examples of eukaryotic vectors with labelled diagrams– 4 marks (Remember)</li></ol>

Understanding techniques in biotechnology.	<ol style="list-style-type: none"><li>1. Define RFLP – 1 mark (Remember)</li><li>2. Distinguish between sandwich ELISA and competitive ELISA – 2 marks (Understand)</li><li>3. Outline the advantages of cryopreservation methods – 4 marks (Analyze)</li><li>4. Explain the principle of agarose gel electrophoresis – 4 marks (Understand)</li><li>5. Differentiate between different types of DNA sequencing methods and its applications. – 15 marks (Analyze)</li><li>6. Explain the steps in isolation of DNA from plant cells – 15 marks (Remember)</li></ol>

**Third Semester B.Sc Degree Internal Examination, February 2023**  
**Department of Microbiology**  
**Complimentary Course – Biotechnology**  
**BT 1331 – CELL BIOLOGY**

**Time: 1 ½ Hours**

**Max. Marks: 40**

**1 Answer the following in one or two sentences. All questions are compulsory**

18. What are histones and where are they found inside a cell?
19. Name two semiautonomous organelles
20. What is a bacteriophage?
21. Calculate the resolution of a microscope with eye piece 10X and objective 40X
22. State Beer-Lamberts law (5x1=5)

**11. Write short paragraph on any four of the following:**

23. Describe the principle and applications of fluorescence microscopy
24. List out the functions of Peroxisome
25. With a neat diagram draw and label the structure of nuclear pore complex
26. Differentiate between Heterochromatin and Euchromatin
27. Name two marker enzymes of mitochondria
28. Explain the function of microtubules
29. Draw a neat labelled diagram of the structure of mycoplasma
13. What are the functions of lysosomes (4x2=8)

**111. Answer in one or two pages on any three of the following:**

30. Difference between differential and density gradient centrifugation
31. Explain Fluid Mosaic model of plasma membrane
32. Write short notes on peroxisome assembly
33. With a labelled diagram explain endomembrane system
34. Describe the difference between prokaryotic and eukaryotic ribosomes
19. Explain the mechanism of action of actin and myosin (3x4=12)

**IV. Write essay on any one question**

20. Summarize the steps in protein targeting to the nucleus with a labelled diagram.
21. Explain Semiautonomous nature of mitochondria and chloroplast.
22. Point out the advantages of electron microscopy, types and its applications.

**(15x1=15)**

**S.D. College, Alappuzha**

**Outcome Based Internal Evaluation Blue Print – 2022-23**

**Programme Name and Code:** B.Sc. Microbiology (345)

**Semester 3**

**Course Name and Code:** Cell Biology (BT 1331)

**Assignment/Seminar**

<b>Relevant Course Outcome:</b> Students learn and understand structure and functions of a cell and its organelles.	<b>Topic:</b> Prepare 20 Power Point slides on microscopic techniques relevant to study cell biology.
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**Internal Question Paper – Mapping of Test Items**

<b>Course Outcomes</b>	<b>Test Items with Marks</b>
Learn the basic classifications of cell types and different unicellular organisms.	4. What is a bacteriophage? – 1 mark (Remember) 5. Draw a neat labelled diagram of the structure of mycoplasma– 2 marks (Understand) 6. Describe the difference between prokaryotic and eukaryotic ribosomes– 4 marks (Understand)
Understanding techniques used to study various cellular processes.	7. Calculate the resolution of a microscope with eye piece 10X and objective 40X– 1mark (Apply) 8. State Beer-Lamberts law– 1 mark (Remember) 9. Describe the principle and applications of fluorescence microscopy– 2 marks (Understand) 10. Difference between differential and density gradient centrifugation– 4marks (Analyze) 11. Point out the advantages of electron microscopy, types and its applications.– 15 marks (Analyze)
Knowing the cellular compartments and the central control of all functions.	8. What are histones and where are they found inside a cell? – 1 mark (Remember) 9. With a neat diagram draw and label the structure of nuclear pore complex– 2 marks (Understand) 10. Differentiate between Heterochromatin and Euchromatin– 2 marks (Analyze) 11. Write short notes on Fluid Mosaic model of plasma membrane– 4 marks (Analyze, Remember) 12. Summarize the steps in protein targeting to the nucleus with a labelled diagram. – 15 marks (Understand, Analyze)
Knowing the organelles of a cell	7. Name two semiautonomous organelles– 1 mark (Remember)

<p>which play a major role in the cellular metabolisms.</p>	<p>8. List out the functions of Peroxisome– 2 marks (Understand)  9. Name two marker enzymes of mitochondria– 2 marks (Remember)  10. Write short notes on peroxisome assembly– 4 marks (Understand)  11. Explain Semiautonomous nature of mitochondria and chloroplast– 15 marks (Analyze, Remember)</p>
<p>Understanding the movement of information through the cell.</p>	<p>12. Explain the function of microtubules – 2 marks (Understand)  13. What are the functions of lysosomes – 2 marks (Remember)  14. With a labelled diagram explain endomembrane system – 4 marks (Analyze)  15. Explain the mechanism of action of actin and myosin – 4 marks (Understand, Apply)</p>