Exam Code: 120604 **Paper Code: 4187**
(30)

Programme: Bachelor of Science (Bio-Technology)
Semester-IV

Course Title: Industrial Biotechnology-I

Course Code: BBTL-4061

Time Allowed: 3 Hours **Max Marks: 60**

Note: Candidates are required to attempt 5 questions, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 12 marks.

Section-A

1. Explain the basic concept of agriculture and its evolution into an industry.
2. Discuss the methods and principles involved in food processing.

Section-B

3. Evaluate the significance of industrially important microbes in various industries. Provide examples of specific microbes and their applications in industrial processes.

4. Discuss various methods of identification of industrially important microbes.

Section-C

5. Explain the concept of strain improvement in industrial microbiology.
6. Discuss the importance of media formulation in optimizing microbial growth and productivity.

Section-D

7. Provide an overview of primary and secondary metabolites production in microbial systems.
8. Describe the process of dairy product production, including curd and yogurt. Discuss the microbial cultures involved in fermentation processes and their role in product quality and flavor development.

Exam Code: 120604 **Paper Code: 4188**
(30)

Programme: Bachelor of Science (Bio-Technology)
Semester-IV

Course Title: Immunology-II

Course Code: BBTL-4062

Time Allowed: 3 Hours **Max Marks: 60**

Note: Candidates are required to attempt 5 questions, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 12 marks.

Section-A

1. Discuss T-dependent and T-independent antigens.
2. Diagrammatically discuss production of monoclonal antibodies and their applications.

Section-B

3. Explain principle of RIA and Immunoblot. Also discuss their application and limitations.
4. Explain principle and types of immunodiffusion assays with diagrams.

Section-C

5. Briefly discuss immunity to intracellular and extracellular bacteria.
6. Discuss immune invasion mechanism used by intracellular and extracellular bacteria.

Section-D

7. Write a short note on followings with examples:
   i. Whole organism vaccine
   ii. Recombinant antigen vaccine
8. Briefly discuss the following databases
   i. Toxoid vaccine
   ii. Recombinant vector vaccine

Exam Code: 120604 **Paper Code: 4190**
(30)

Programme: Bachelor of Science (Bio-Technology)
Semester-IV

Course Title: Skill Development in Biotechnology

Course Code: BBTL-4064

Time Allowed: 3 Hours **Max Marks: 40**

Note: Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 8 marks.

Section-A

1. What is food spoilage? Discuss the mechanism of food borne infection and what are the risks associated with consuming spoiled food?
2. Write a note on Low calorie sweeteners. Discuss with the help of suitable examples.

Section-B

3. What is Food Packaging? Discuss the various methods of food packaging.
4. Discuss food preservation: its need and methods in detail.

Section-C

5. Discuss the following:
   (i) Antinutrients
   (ii) Vegan Diet
   (iii) Balance diet
6. What is BMR? Discuss the factors affecting BMR.

Section-D

7. Write a note on
   (i) Breeds Smear
   (ii) SCP
8. Discuss
   (i) Bioluminescence
   (ii) RDT

Exam Code: 120604 Paper Code: 4191
(30)

Programme: Bachelor of Science (Bio-Technology)
Semester-IV

Course Title: Fundamentals of Bioinformatics

Course Code: BBTL-4065

Time Allowed: 3 Hours Max Marks: 40

Note: Candidates are required to attempt 5 questions, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 8 marks.

Section-A

1. Discuss various printed output devices used for computers.
2. Discuss the followings:
   i. Data storage devices
   ii. serial, line and page printers

Section-B

3. Define sequence alignment and its significance. Briefly discuss and compare global and local sequence alignment.

4. Define gap and discuss various gap penalties. Also discuss why gaps are utilized in sequence alignment?

Section-C

5. What are scoring matrices? Discuss while comparing PAM. and BLOSUM matrices.
6. Define multiple sequence aligmnent. Briefly explain progressive and iterative alignment methods for Multiple Sequence Alignment.

Section-D

7. Write a short note on followings with examples:
   i. Archival databases
   ii. Curated databases
8. Briefly discuss the following databases
   i. GenBank
   ii. Prosite
   iii. PDB

Exam Code: 120604 **Paper Code: 4189**
(30)

Programme: Bachelor of Science (Bio-Technology)
Semester-IV

Course Title: Biochemistry-IV

Course Code: BBTL-4083

Time Allowed: 3 Hours **Max Marks: 60**

Note: Candidates are required to attempt 5 questions, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 12 marks.

Section-A

1. Expound nitrogen metabolism in detail.
2. Discuss the synthesis of amino acids of 3-phosphoglycerate precursor family.

Section-B

3. Describe the catabolic pathway of phenylalanine and tyrosine in human beings.
4. Discuss the inborn errors of amino acid catabolism.

Section-C

5. " Elucidate the clinical significance of purine biosynthetic pathway.
6. Discuss the biosynthesis of purines.

Section-D

7. Explain the pathway of degradation of pyrimidines.
8. Discuss salvage pathway in detail.

Exam Code: 120604 **Paper Code: 4192**
(30)

Programme: Bachelor of Science (Bio-Technology)
Semester-IV

Course Title: Zoology-II

Course Code: BBTL-4486

Time Allowed: 3 Hours **Max Marks: 40**

Note: Attempt five questions in all, selecting at least one question from each section (A to D) Fifth question can be attempted from any section. Draw diagrams wherever necessary. Each question carries 8 marks.

Section A

1. What do you mean by theory of Biogenesis? Explain the experiments supporting this theory.
2. Write a detailed note on Evolution of Eukaryotes.

Section B

3. Explain the postulates given by Lamarckism in his theory of Evolution.
4. Explain different events of Geological time scale.

Section C

5. Explain the life cycle mode of infection and pathogenicity of the Trypanosoma diagrammatically. How can disease caused by this be treated?
6. Explain the life cycle mode of infection and pathogenicity of the Ascaris diagrammatically. How can disease caused by this be treated?

Section D

7. Write a detailed note on the distribution and control of vectors of Malaria and Typhus.
8. Discuss in detail the distribution and control of vectors of Filariasis and Plague.