

## **B.Sc. Part III (Sem-VI) Examination BIOTECHNOLOGY (ENTIRE)**

### **BBTT 601 Advances in Genetic Engineering**

#### **Q 1: Answer the following**

1. Define cDNA library
2. Define subtracted library
3. Enlist the methods for screening DNA libraries
4. Enlist the methods for chemical synthesis of DNA.
5. Define plaque hybridization
6. Define Cloning
7. Enlist methods for screening of recombinants
8. Enlist blocking groups attached to nucleotides in phosphoramidite methods.
9. Enlist physical methods of gene cloning into host cell.
10. Enlist Chemical methods of gene cloning into host cell.
11. Define Melting Temperature.
12. Define Molecular Marker.
13. Define Primer.
14. Define Gene silencing.
15. Define Gene knockout.
16. Define Transgenesis.
17. Define Inverse PCR.
18. Define Satellite DNA.
19. Define Gene knock down.
20. Define RFLP marker.
21. Define AFLP
22. Define Antisense RNA.
23. Define Microsatellites.
24. Define Minisattelites.
25. Define Simple Sequence Repeats.
26. Define ISSR.
27. Define Tandom Repeats.

28. Define SNPs.
29. Define Transformation
30. Define Mutations.

**Q2: Attempt any TWO**

1. Explain phosphotriester method of DNA synthesis.
2. Explain phosphitetriester method of DNA synthesis.
3. Explain in detail construction of cDNA library.
4. Explain in detail construction of Genomic DNA library.
5. Write in detail the methods of screening of DNA libraries.
6. Explain in brief physical methods of gene cloning into host cell.
7. Explain Chemical methods of gene cloning into host cell.
8. Give the steps involved in PCR reaction. Explain reverse transcriptase PCR.
9. Give the steps involved in PCR reaction. Explain Real Time PCR.
10. What is molecular marker? Explain any two types of molecular markers.
11. Explain insertion of foreign DNA into the host cell by using agrobacterium mediated gene transfer.
12. What is Recombinant DNA technology? Explain in detail Knockout mice.
13. Explain in detail mechanism and applications of RFLP.
14. Explain in detail mechanism and applications of RAPD.
15. Explain in detail mechanism and applications of AFLP.
16. Explain in detail mechanism of Knockout mice.

**Q3: Attempt any Four.**

1. Explain phosphodiester method of DNA synthesis.
2. Explain plaque hybridization for screening of library.
3. Explain colony hybridization for screening of library.
4. Explain immunological screening of library.
5. Give the method for synthesis of Somatostatin.
6. Explain in detail Agrobacterium mediated gene transfer method for cloning.
7. Explain any two methods for screening of recombinants.

8. Explain Fidelity of thermostable enzyme?
9. Give the application of PCR.
10. Write a note on genomic Library.
11. Describe chemical synthesis.
12. Write a note on Blue White Selection.
13. Write a note on RFLP.
14. Write a note on Chemical synthesis of gene.
15. Explain screening of colony hybridization.
16. Write a note on Primer designing.
17. Write a note on construction of Genomic DNA library.
18. Write a note on fluorescent activated cell sorter.
19. Write a note on Knockout mice.
20. Write a note on Colony PCR.
21. Explain screening of plaque hybridization.
22. Write a note on Nested PCR.
23. Write a note on Microinjection and electroporation gene transfer.

## **BBTT602: Food and Microbial Biotechnology**

### **Q 1: Answer the following**

31. Define

1. What are the components of the beer?
2. Fed batch culture
3. Koji fermentation
4. Retort process
5. Fortified wine
6. Why yogurt is pro-biotic food?
7. Continues culture
8. What are ingredients of bread?
9. Asepsis
10. Food safety
11. Batch culture
12. Single cell protein
13. What is kettle boil?
14. Food borne illness
15. Genetically modified food
16. Wort
17. Use of Hop plant
18. Table wine
19. Sparkling wine
20. Champagne
21. Inoculums
22. Top fermented beer
23. Bottom fermented beer
24. Distilled beer
25. Malting
26. Mashing
27. Klining
28. Kettle boil
29. Carbonation
30. Single fermentation and double fermentation difference

### **Q2: Attempt any one (10 M)**

17. Discuss steam blanching in preservation of food
18. What is retort process and steps involved in the retort process for unrefrigerated food
19. What is hurdle technology for food preservation? Discuss principles involved in the hurdle technology

20. What is chemical preservation? Discuss chemical preservation by SO<sub>2</sub>.
21. What is chemical preservation? Discuss chemical preservation by NO<sub>2</sub>
22. What do you mean by food toxicity? Discuss Aflatoxin
23. Explain in brief microbial production of antibiotics
24. Explain in brief preservation methods and give any two example of food toxicity
25. Explain the impact of GM food on human health principle and risk analysis
26. Explain in brief Beer fermentation
27. Explain in brief microbial production of vitamins
28. Explain the types of spoilage and give any two preservation methods
29. Explain in brief wine fermentation
30. Explain the idali fermentation
31. Explain in brief microbial production of Amylase enzymes

**Q3: Attempt any two. (5 M)**

24. Explain the nutrifacts of yogurt
25. Explain the dahi fermentation process
26. Explain the food toxicity – mycotoxin with example
27. Write a note on chemical preservatives
28. Write a note on impact of GM food and their regulations
29. Write a note on Single cell protein
30. Explain the nutrifacts of idali
31. Explain the cheese fermentation process
32. Explain the impact of GM food on human health principles
33. Explain the food toxicity – neurotoxin with example
34. Explain the Characteristics of food supply for public health
35. Write a note on edible mushroom
36. What is the health benefit of bread?
37. Explain the Characteristics of food supply for public health
38. Explain the impact of GM food on human health
39. Explain the food toxicity – Exotoxin with example
40. Write a note on fermented pickles
41. Give the difference between pure and mixed culture
42. Explain the bread fermentation
43. Explain the fermented pickles
44. Explain the biological spoilage
45. Explain the chemical spoilage
46. Explain the physical spoilage
47. Explain the nutrifacts of sourkraut
48. Explain the probiotics
49. Explain the Single cell protein

50. Explain the food borne illness – shegallosis
51. Explain the food borne illness –Amoebiosis
52. Explain the food borne illness – Aspergillosis
53. Explain microbial production of organic acids

## **BBTT 603 Applications of Biotechnology in Health question Bank**

### **Q.Short answer question:**

1. Stem cell
2. Transgenesis
3. Vaccine
4. Subunit vaccine
5. Edible vaccines
6. Exvivo gene therapy
7. Epidemiology
8. RAPD
9. RFLP
- 10.PCR
- 11.Progenitor cells
- 12.Invivo gene therapy
- 13.Biosensor
- 14.Transgenic cattle
- 15.Monoclonal Antibodies
- 16.Germline gene therapy
- 17.ELISA
- 18.Characteristics of stem cells.
- 19.Vaccinia virus vaccine
- 20.SCID
21. Hepatis B virus vaccine
- 22.Retrovirus vector system
- 23.Transgenic mice.
24. Public health
- 25.antisense RNA technology

### **Q. Long answer question:**

1. Explain different methods of gene therapy.
2. Explain the Theory, Principle and Application of Biosensor
3. Explain the production of transgenic cattle with applications.
4. Explain the stem cell technology with applications.
5. What is subunit vaccine? Explain with two examples.
6. Explain the production of transgenic mice with applications.
7. Explain the production of monoclonal antibodies with applications.
8. Explain the principle, steps involved and applications of PCR
9. Explain role DNA in diagnosis of genetic diseases.
- 10.What is biosensor. Explain its types.
- 11.Explain exvivo gene therapy with examples.
- 12.What is transgenesis?Explain principle and its applications.
- 13.What is DNA vaccine? Explain with two examples.
- 14.Explain invivo gene therapy with examples.
- 15.Explain role DNA in diagnosis of infectious diseases

**Q. Short notes:**

1. Explain Instrumentation biosensor
2. Explain applications of vaccinia virus vaccine
3. Give the applications of stem cells.
4. Principle of PCR.
5. Applications of hybridization
6. Write the properties of stem cells.
7. Explain production of hepatitis B virus vaccine.
8. Write the application of transgenic cattle.
9. Explain principle of RAPD.
10. Types of vaccines.
11. Applications of cholera vaccine
12. Instrumentation of biosensor.
13. Explain ELISA technique.
14. Write the properties of monoclonal antibodies.
15. Write a note on gene therapy.
16. Production of transgenic cattle
17. Application DNA in diagnosis of cancer
18. Principles of transgenesis
19. Explain hyperfine splitting.
20. Applications of edible vaccine.
21. Explain formulation of Mab.
22. Explain epidemiology.
23. Principle of preservation.
24. Explain Application RAPD.
25. Explain applications of edible vaccine.
26. Principle of ELISA.
27. Production of DNA vaccines.
28. Application antisense RNA technology.
29. Explain characteristics of progenitor cells.
30. Explain applications of DNA in diagnosis of genetic diseases.



**B.Sc. Part III (Sem-VI) Examination BIOTECHNOLOGY (ENTIRE)  
Computational Biology (BBTT 604)**

**Q.1 Answer in One sentence.**

**2 Marks**

- |   |                      |
|---|----------------------|
| 1) Define mean.                                     | 13) What is PubMed?  |
| 2) Define Median.                                   | 14) What is SCOP?    |
| 3) Define standard deviation.                       | 15) What is WAN?     |
| 4) Explain the term Curvogram.                      | 16) NCBI             |
| 5) Explain the term HTML.                           | 17) EMBL             |
| 6) Explain the term HTTP.                           | 18) DDBJ             |
| 7) Explain the term Internode in phylogenetic tree. | 19) Prosite          |
| 8) Explain the term phylogram.                      | 20) pFam             |
| 9) Explain the term WWW?                            | 21) PRINT            |
| 10) What is CATH?                                   | 22) Ramchandran Plot |
| 11) What is LAN?                                    | 23) Peptide Bond     |
| 12) What is MAN?                                    | 24) PubMed           |
|   | 25) BLAST            |

**Q.2 Attempt any two of the following.**

**10 Marks**

1. Describe the different Secondary Protein Sequence databases.
2. Describe the role of computers in biology.
3. Explain the different forms to illustrate the graphical data in Microsoft EXCEL.
4. Explain the different statistical tools used to interpret the biological data using MS-EXCEL applications.
5. What are databases? Describe in details Primary protein sequence databases.
6. What are databases? Explain different types of structural databases.
7. What is human genome project? Give its goals and applications.
8. What is phylogeny? Describe the different steps involved in phylogenetic analysis.
9. What is sequence alignment? Explain in detail about pair wise sequence alignment.
10. What are databases? Describe literature databases.

**Q. 3 Attempt any four of following.**

**05 Marks**

1. Describe any two primary protein sequence databases.
2. Describe BLAST.
3. Describe SCOP.
4. Describe CATH.
5. Describe the different types of protein structures.
6. Explain the different forms to illustrate the graphical data in Microsoft EXCEL.
7. Explain the different methods of phylogenetic analysis.
8. Explain the different statistical methods used analysis of biological data.
9. Explain the different statistical methods used analysis of biological data.
10. Explain the different tools used in MS-Word for data representation.
11. Explain the different types of network connections used for communication between computers.
12. Explain the different types of phylogenetic tree.
13. Give the applications of human genome project.
14. Give the different steps involved in construction of phylogenetic tree.
15. What are literature databases? Explain with suitable types.
16. What is human genome project? Give its goals.
17. Write a note on application of computers in Biology.
18. Write a note on dot matrix.
19. Write a note on nucleotide sequence databases.
20. Write a note on BLAST.

# **Entrepreneurship Development in Biotechnology (SECCBTT 607)**

## **Q.1 Answer in One sentence.**

**03X02= 10**

- 1) Types of organizations.
- 2) What is Innovation?
- 3) Name any two financial institutions in fostering bioentrepreneurship.
- 4) Types of Entrepreneurs
- 5) What is MSME?
- 6) Different government agencies supporting biotechnology industry.
- 7) Explain the term Proprietorship.
- 8) What are different sources of finance for Entrepreneurs.
- 9) What is Project report?
- 10) Proprietor
- 11) Partnership Proprietorship
- 12) Marketing
- 13) Branding
- 14) LLP
- 15) Copyright

## **Q.2 Attempt any two of the following.**

**06X01=06**

1. What are the different characteristics of Entrepreneurs? Give an Example of successful Entrepreneur in Biotechnology
2. Describe the types of enterprises along with ownership structures.
3. What is MSME? Explain different types of Enterprises.
4. What are basic principles and practices of management in business.
5. Write a note on different government schemes and their role in Biotechnology industries.
6. What are the different characteristics of Entrepreneurs? Explain the different types of entrepreneurs.

7. What does Entrepreneurial Motivation mean? Explain the important parameters involved in it.
8. Describe the primary and secondary sources in marketing research.
9. Write a note on different types of enterprises.
10. Write a note on different financial institutions fostering bioentrepreneurship.

**Q. 3 Attempt any two of following.**

**04X02=08**

1. Describe the important steps involved in identification and evaluation of market.
2. What are the different factors affecting the biotechnology industries?
3. Explain the basic principles and practices in management.
4. Give the important characteristics of entrepreneurs.
5. Explain the different types of ownership structures.
6. Write a note on any one successful entrepreneur in Biotechnology.
7. Write a note on different factors affecting biotechnology business.
8. Describe the different types of ownership structures.
9. Give the steps involved in Identification and evaluation of market potential of various bio-entrepreneur sectors.
10. Write a note on any two financial institutions in fostering bioentrepreneurship.
11. Write a note on Marketing Limitations for Startups
12. Write a note on example of successful entrepreneur in Biotechnology