

**B.Sc (BT) (Sem.-6)
TECHNICAL WRITING**

Subject Code : BSBT-601-18

M.Code : 79456

Date of Examination : 16-05-2023

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

- Write briefly :
 - How do we define technical writing?
 - What is persuasion?
 - What points should we keep in mind while collecting material?
 - What points should we keep in mind while describing any mechanism?
 - What are primary sources?
 - What is a rough draft?
 - What is plagiarism?
 - Elaborate one technical writing style.
 - What is a research report?
 - List two important points to write an outline.



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SECTION-B

- Elaborate audience analysis.
- How do we arrange description of process?
- Discuss Job Application procedure.
- Discuss important elements of a formal report.
- Elaborate research techniques.

SECTION-C

- Elaborate different aspects of technical writing.
- Write an application for the post of a Manager in a reputed company. Draft your resume. Imagine all details.
- Discuss professional ethics in detail.

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Total No. of Questions : 09

B.Sc. - Honours (Microbiology) (Sem.-6)
PLANT MICROBIAL INTERACTIONS
Subject Code : BSMB605-20
M.Code : 92521

Date of Examination : 16-05-2023

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write a brief note on the following :

- a) Mutualism
- b) Phyllosphere
- c) Mycorrhizae
- d) Phytohormones
- e) Dairy Products
- f) Microorganisms as food
- g) Endotoxins
- h) Nutrients
- i) Microbial interactions
- j) Plant disease.

SECTION-B

2. Give an account on Toxicology of microbes in relation to dairy products
3. Write a brief note on plant defense mechanism against microbes.
4. Write a short note on Nitrogen fixation
5. Give an account on role of bactericidal agents for plants.
6. Discuss important plant pathogenic organisms

SECTION-C

7. Discuss future prospects challenges and limitations of plant microbial interactions
8. Give an account on various plant extract and their role in antifungal agents
9. Discuss multitude functions of microbial consortia in rhizosphere with emphasis on phytohormones

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B.Sc. (BT) (Sem.-6)
BIOTECHNOLOGY & HUMAN WELFARE

Subject Code : BSBT-148-18

M.Code : 79459

Date of Examination : 18-05-2023

Time : 3 Hrs.

Max. Marks : 40

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C THREE questions carrying TEN mark each and students have to attempt any TWO questions.

SECTION-A**I. Write briefly :**

- a) Biofertilizers
- b) Xenobiotic compounds
- c) Recombinant vaccines
- d) DNA fingerprinting
- e) Microbial polysaccharides
- f) Monoclonal antibodies
- g) Human genome project
- h) Penicillin
- i) Gene therapy
- j) Chemical pesticides.

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SECTION-B

2. How are microbes helpful in abatement of pollution?
3. Write a note on symbiotic nitrogen fixation.
4. What are the substrates used for industrial production of ethanol?
5. Describe production and use of biodegradable polymers.
6. How is biotechnology helpful in diagnosis of disease? Explain.

SECTION-C

7. Describe the role of biotechnology in criminal investigations.
8. Write a note on microbial production of therapeutic agents.
9. What is the scope of protein engineering? Describe the techniques of protein engineering.

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Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc. (Bio Technology) (Sem.-6)

PLANT BIOTECHNOLOGY

Subject Code : BSBT151-18

M.Code : 79462

Date of Examination : 20-05-2023

Time : 3 Hrs.

Max. Marks : 40

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
2. SECTION-B contains FIVE questions carrying TWO and HALF marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :
 - a) Hybrid cell
 - b) Nitrogenase
 - c) Pluripotent
 - d) Haploid
 - e) Stem cell
 - f) Differentiation
 - g) Meristem culture
 - h) Embryogenesis
 - i) Microspore culture
 - j) Biocontrol of pathogens.



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SECTION-B

2. Write a short note on callus culture
3. What do you understand by diploidization? Explain
4. Explain plant growth promoting bacteria with suitable example
5. Give the applications of somaclonal variation
6. Discuss the briefly somatic hybridization.

SECTION-C

7. Explain the process of micropropagation along with its advantages
8. Give an account of protoplast isolation and culture techniques
9. Write short notes on anther culture and nitrogen fixation.

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July-2023

B.Sc (Bio Technology) (Sem.-6)
BIOINFORMATICS
Subject Code : BSBT149-18
M.Code : 79460
Date of Examination : 25-05-23

Max. Marks : 40

Time : 3 Hrs.

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE marks each.
2. SECTION-B contains FIVE questions carrying TWO AND A HALF marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) Applications of bioinformatics
- b) Local alignment
- c) Identity in sequence alignment
- d) Genomics
- e) Motif
- f) Biological databases
- g) FASTA
- h) Protein folding
- i) Pairwise alignment
- j) Neural network.

SECTION-B

2. Enlist the factors affecting the choice of template selection during homology modeling.
3. Give a short note on Smith-Waterman algorithm.
4. Discuss protein threading approach.
5. Give the applications of bioinformatics in computer aided drug designing.
6. Write a note on scoring matrices.

SECTION-C

7. Explain various approaches used in multiple sequence alignment.
8. What is phylogeny? What are the various methods for phylogenetic analysis?
9. Elaborate Chou-Fasman and GOR methods for predicting secondary structure.

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B.Sc. (Bio Technology) (Sem-6)
DEVELOPMENTAL BIOLOGY
Subject Code : BSBT-147-18
M.Code : 79458
Date of Examination : 27-05-2023

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

I. Write briefly :

- Spermatogenes
- Meroblastic cleavage
- Secondary embryonic induction
- Gastrulation
- Function of placenta
- Fate maps
- Neurulation
- Function of placenta
- Emboly
- Plasticity

SECTION-B

- Discuss briefly the different types of morphogenetic processes involved in development of organs?
- What are fate maps? Write down the methods to construct the fate maps.
- Classify eggs based on the amount of yolk.
- Write a short note on types of embryonic induction
- Describe briefly about organogenesis.

SECTION-C

- Write a detailed note on types of embryonic differentiation
- Illustrate the stages of oogenesis with the help of diagram.
- Write in detail about formation and differentiation of primary germ layers.

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Total No. of Questions : 09

Total No. of Pages : 02

B.Sc. (BT)
TECHNICAL WRITING
 (Sem.-6)
 Subject Code : BSBT-601-18
 M.Code : 79456

Date of Examination : 02-01-2023

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) Plagiarism
- b) Technical writing
- c) Importance of collecting notes
- d) Resume
- e) Ethics in research
- f) Inferences
- g) Understanding of Audience
- h) Proposal
- i) Title page
- j) Rough draft.

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SECTION-B

2. How does general writing differ from technical writing explain by taking suitable examples.
3. Discuss the significance of library resources for technical writing.
4. Explain the different steps involved in proposal writing.
5. What is Bibliography? Discuss the type of references.
6. What is Research Proposal? Write and explain all the steps of research proposal

SECTION-C

7. How would you prepare skeletal framework for a formal report? Explain.
8. Describe and explain the procedure of technical report writing? Also explain what is preliminary study, careful planning in terms of report writing.
9. Write a job application letter for the post of PHP Expert along with your Resume.



NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

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DEC-2022

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. (BT) (Sem.-6)
ENVIRONMENTAL BIOTECHNOLOGY
Subject Code : BSBT-150-18
M.Code : 79461

Date of Examination : 06-01-2023

Time : 3 Hrs.

Max. Marks : 40

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
2. SECTION-B contains FIVE questions carrying 2 1/2 (Two and Half) marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A

I. Write short notes on :

- a) Define Phytoremediation.
- b) What are Biofilms?
- c) What is COD?
- d) What is Bio accumulation?
- e) What are trickling filters? What is its use?
- f) What are Nitrogen fixing microorganisms?
- g) What is Gasohol?
- h) List types of Polluted soils.
- i) Define Recalcitrance.
- j) Which microbes work in anaerobic digesters? Give examples.

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SECTION-B

2. Discuss Bio-remediation of Water contaminated with heavy metals and detergents.
3. Discuss Primary treatment of Waste water.
4. Write a note on Phytoremediation.
5. Write a note on strategies for Soil Bioremediation.
6. Draw a comparison between Modern and Conventional fuels.

SECTION-C

7. Deliberate on secondary treatment strategies for Industrial Effluents.
8. Explain role of microorganisms in Bioleaching and Ore Enrichment.
9. Discuss biodegradation of pesticides and complex hydrocarbons by Microorganisms.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.

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B.Sc. (BT) (Sem.-6)
MEDICAL MICROBIOLOGY
Subject Code : BSBT-152-18
M.Code : 79463
Date of Examination : 09-01-2023

Time : 3 Hrs.

Max. Marks : 40

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
2. SECTION-B contains FIVE questions carrying TWO & HALF marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) What leads to Septicemia?
- b) Disease caused by T pallidum.
- c) Explain Subcutaneous infection.
- d) Genetic material of Orthomyxoviruses.
- e) An agent of blood-borne infection.
- f) What is systemic infection?
- g) What leads to opportunistic infections?
- h) Explain nosocomial infections.
- i) Name one Papova Virus.
- j) Which pathogen causes Diphtheria?

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2. Discuss the normal micro-flora of the body.
3. Briefly explain the gram negative bacteria morphology.
4. Describe the salient features of Paramyxoviruses.
5. Discuss the pathology of Candidiasis.
6. Explain the laboratory diagnosis of Gram positive bacteria.

SECTION-C

7. Write a note on the morphology and pathogenesis of M leprae.
8. How does HIV progression lead to AIDS?
9. What are Dermatophytes? Write 3 symptoms for the same.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

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Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc. (BT) (Sem.-6)
BIOTECHNOLOGY & HUMAN WELFARE

Subject Code : BSBT-148-18

M.Code : 79459

Date of Examination : 04-01-2023

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- SECTION-C THREE questions carrying TEN mark each and students have to attempt any TWO questions.

SECTION-A

I. Write briefly :

- Define Pollutants.
- Define Composting.
- What are Bioreactors?
- What is alcoholic fermentation?
- Define Artificial Insemination.
- List names of Microbes involved in Nitrogen Fixation.
- Define Protein engineering.
- What are biodegradable polymers? Give examples.
- What is the role of heeding and weeding in Livestock improvement?
- Which microbes work in anaerobic digesters? Give examples.

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SECTION-B

- Write about Nitrogen fixation.
- Why and how are Proteins engineered?
- Write a note on Human Genome Project.
- Briefly discuss development and application of Recombinant live vaccines.
- Deliberate on Industrial production of alcohols.

SECTION-C

- Elaborate on objectives and methodologies employed for Livestock improvement.
- Explain principle and strategies used for development of Biodegradable polymers. Also discuss applications.
- Discuss Role/applications and methods of forensic biotechnology with special reference to DNA Fingerprinting.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

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B.Sc. (BT) (Sem.-6)
DEVELOPMENTAL BIOLOGY
Subject Code : BSBT-147-18
M.Code : 79458
Date of Examination : 03-01-2023

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

I. Write briefly :

- Cocloblastula
- Radial Cleavage
- Acrosome Reaction
- Polarity of egg
- Organizer
- Epiboly
- De-differentiation
- Anisogamy
- Spermiation
- Primary Egg membrane.

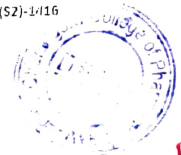
SECTION-B

- Describe the function of Sertoli cells.
- Explain with an example the primary embryonic induction.
- Describe formation of egg membranes and discuss their functions.
- Explain mechanism of differential gene expression.
- Discuss process of vitellogenesis.

SECTION-C

- Discuss the types of placenta with regard to the intimacy between the foetal and maternal parts of placenta.
- Explain in detail the significance of 'Blastulation and Blastula formation' in the process of development.
- Discuss formation and differentiation of primary germ layers in detail.

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Roll No.

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Total No. of Questions : 09

Total No. of Pages : 02

B.Sc. (BT) (Sem.-6)
ENVIRONMENTAL BIOTECHNOLOGY
Subject Code : BSBT-150-18
M.Code : 79461
Date of Examination : 14-07-22

Time : 3 Hrs.

Max. Marks : 40

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
2. SECTION-B contains FIVE questions carrying 2½ (Two and Half) marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A

1. Write short notes on :

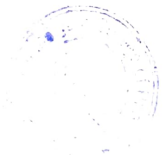
- a) Define Phytoremediation.
- b) What are Biofertilizers?
- c) What is BOD?
- d) What are Bioindicators?
- e) When is World Environment Day observed?
- f) What are Oxidation ponds?
- g) What is Biogas?
- h) What are Contaminated soils?
- i) Define Xenobiotics.
- j) What are Methanogenic Bacteria? Give examples.

SECTION-B

2. Discuss Bioremediation of Water contaminated with Oil Spills.
3. Write a note on Phytoremediation.
4. What are Conventional Fuels? Discuss their Environmental impacts.
5. What is environmental significance of Genetically modified microbes?
6. What are algal and fungal biofertilizers?

SECTION-C

7. Deliberate on Microbial Degradation of Lignin and Cellulosic compounds.
8. Explain the role of Symbiotic and asymbiotic Nitrogen fixing microbes in soil enrichment.
9. Elaborate on Modern fuels, their types, Advantages and Environmental Impact.


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Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc. (BT) (Sem.-6)
PLANT BIOTECHNOLOGY
Subject Code : BSBT-151-18
M.Code : 79462
Date of Examination 18-07-22

Time : 3 Hrs.

Max. Marks : 40

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE marks each.
2. SECTION-B contains FIVE questions carrying TWO & HALF marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a. Hybrid cells
- b. Cell suspension culture
- c. Microspore culture
- d. Hydrogenase
- e. Biocontrol of pathogens
- f. Meristem culture
- g. Somaclonal variation
- h. Free-living bacteria
- i. Embryogenesis
- j. Cybrids.

SECTION-B

2. What is the potential of somatic hybridization?
3. How can ovule culture be produced?
4. Explain the micropropagation of axillary bud proliferation.
5. Describe somaclonal variation applications.
6. Discuss the Nitrogen fixation by bacteria.

SECTION-C

7. Write a note on the plant growth promoting bacteria.
8. What are the limitations and potential of Somatic hybridization?
9. Discuss the chromosome elimination techniques for the production of haploids in cereals.



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Roll No. _____

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc. (BT) (Sem.-6)

MEDICAL MICROBIOLOGY

Subject Code : BSBT-152-18

M.Code : 79463

Date of Examination : 18-07-22

Time : 3 Hrs.

Max. Marks : 40

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
2. SECTION-B contains FIVE questions carrying TWO & HALF marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a. What are bacterial toxins?
- b. Disease caused by *H. influenzae*.
- c. Name one fungal infection.
- d. Genetic material of Retroviruses.
- e. An agent of subcutaneous infection.
- f. What is localized infection?
- g. What leads to secondary infections?
- h. Explain virulence factors.
- i. Name one Pox Virus.
- j. Which pathogen causes Typhoid?

SECTION-B

2. Discuss the pathogen that causes Giardiasis
3. Briefly explain the gram positive bacteria morphology.
4. Describe the salient features of Tricophyton.
5. Discuss the pathology of Aspergillosis.
6. Write the symptoms of Tuberculosis

SECTION-C

7. Write a note on the symptoms and preventive measures of *C. botulinum*.
8. How does Hepatitis infection lead to liver cirrhosis?
9. Describe the salient features of Orthomyxoviruses.



June-2022

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B.Sc. (BT) (Sem.-6)
BIOINFORMATICS
Subject Code : BSBT-149-18
M.Code : 79460
Date of Examination : 12-07-22

Time : 3 Hrs.

Max. Marks : 40

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
2. SECTION-B contains FIVE questions carrying 2½ (Two and Half) marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A**1. Write short notes on :**

- a) GenBank
- b) Homology
- c) Local alignment
- d) Scoring matrices
- e) UnRooted tree
- f) Repeats
- g) TBLASTN
- h) GOR method
- i) Phylogram
- j) GenScan.



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SECTION-B

2. Give an overview on the limitations of Bioinformatics.
3. Describe briefly the BLAST algorithm and scoring parameters.
4. Discuss the progressive alignment method for MSA.
5. Elaborate on the use of Molecular Visualization tools in Structural Bioinformatics.
6. Discuss the molecular Clock theory.

SECTION-C

7. Write a note on the Homology modeling method for protein structure prediction.
8. Discuss the Smith-Waterman algorithm for sequence alignment.
9. Elaborate on the different steps in Computer Aided Drug Design.

B.Sc. (BT) (Sem.-6)
BIOTECHNOLOGY & HUMAN WELFARE

Subject Code : BSBT-148-18

M.Code : 79459

Date of Examination : 08-07-22

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SEVEN questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C THREE questions carrying TEN mark each and students have to attempt any TWO questions.

SECTION-A**1. Write briefly :**

- a) Define Vermicomposting.
- b) Define Heeding and Feeding.
- c) What are Anaerobic and aerobic Bioreactors?
- d) What are Fermenters?
- e) Define IVF and embryo cloning.
- f) What are Nitrogen Fixers?
- g) Define Enzyme engineering.
- h) How are biodegradable Polymers used?
- i) Why are Organopollutants difficult to degrade?
- j) What are non toxic Therapeutic agents? Give examples.



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SECTION-B

2. Write about Plant-Microbe interactions.
3. Discuss objectives and methods employed for Livestock improvement.
4. Discuss aim, objectives and significance of Human Genome Project.
5. What is DNA Fingerprinting? How it is applied in Forensics?
6. Explain development of Biodegradable polymers.
7. Discuss development of BT crops. Explain role and mechanism of Action.
8. Write a note on Environmental biodegradation of agricultural waste.

SECTION-C

9. Elaborate on the objectives and strategies involved in Protein engineering.
10. Discuss developments of Recombinant Live Vaccines and Non-Toxic Therapeutic agents.
11. Deliberate on strategies for Industrial Production of Antibiotics.

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**BSC (BT)(Sem.-6)
TECHNICAL WRITING**
Subject Code : BSBT-601-18
M.Code : 79456

Date of Examination : 04-07-2022

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

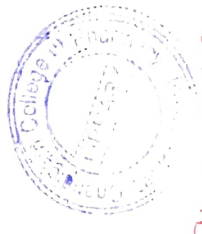
- a) Data vs Information
- b) Technical writing
- c) Importance of Notes
- d) Resume Vs Biodata
- e) Importance of research
- f) Inferences
- g) Understanding of Audience
- h) Proposal
- i) Title page
- j) Secondary source of data

SECTION-B

2. How does general writing differ from technical writing? Explain by taking suitable examples.
3. Discuss the significance of library resources for technical writing.
4. Explain different parts of proposal writing.
5. Enlist the elements of the formal research report.
6. What are the various kinds of research techniques used by researchers in present times.

SECTION-C

7. Write a report on launching of a new product by your company
8. Explain in detail the techniques of technical report writing.
9. Write a job application letter for the post of Digital Marketer along with your Resume.



June - 2022

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No. _____

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc.(BT) (2014 to 2017) (Sem.-6)

TOTAL QUALITY MANAGEMENT & ENTREPRENEURSHIP

Subject Code : BSBT-316

M.Code : 47071

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Answer briefly :

- a. Define Entrepreneur.
- b. What are the characteristics of a successful entrepreneur?
- c. What is meant by sole proprietorship?
- d. Distinguish between small scale industry and ancillary industry.
- e. What is a business plan?
- f. Define Quality Audit.
- g. What is meant by Statistical quality control?
- h. List the problems faced by women entrepreneurs in India.
- i. What are the various elements of Quality Cost?
- j. Briefly give the role of BIS.

SECTION-B

2. Elaborate the various Government Incentives available for entrepreneurial ventures units in India.
3. What are the requirements of ISO 9000:2000 standards? Explain.
4. Discuss the various tools for quality management.
5. Explain the significance of entrepreneurship development in India.
6. What are the essential personality characteristics of an entrepreneur?

SECTION-C

7. a. Outline the basic concept of total quality. What are the advantages to a firm of pursuing total quality management approach?
b. Highlight the contribution of Deming to the Total Quality Management movement.
8. Enumerate various institutions assisting entrepreneurs. What role these institutions play for promoting entrepreneurship in India?
9. a. What are the various costs associated with quality? Elaborate
b. Discuss various theories of entrepreneurship.



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Total No. of Questions : 09

Total No. of Pages : 02

B.Sc.(BT) (2014 to 2017) (Sem.-6)
PLANT BIOLOGY
Subject Code : BSBT-304
M.Code : 47073

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. SECTION-B contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. SECTION-C contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION-A

Q1. Define :

- a) Induced mutations
- b) Cryopreservation
- c) Embryo Rescue
- d) Somaclonal Variations
- e) Agar cultures
- f) Cryoprotectants
- g) Anther culture
- h) Germplasm
- i) Micropropagation
- j) Callus

SECTION-B

- Q2. Discuss the somatic embryo genesis and its advantages.
- Q3. What are virus free plants?
- Q4. What are artificial seeds? What are their advantages?
- Q5. Write about the homozygous lines.
- Q6. How adventitious buds are induced?

SECTION-C

- Q7. Describe large scale culture and the problems associated with large scale Culture of plant cells.
- Q8. Define Virus Indexing. How virus free stocks are maintained. Give their applications and limitations.
- Q9. What do you know about the following :
 - a) Recovery of interspecific hybrids.
 - b) Analytical breeding and production of only male population.

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INSTRUCTION TO CANDIDATES :

1. SECTION-A is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. SECTION-B contains **FIVE** questions carrying **FIVE** marks each and students has to attempt any **FOUR** questions.
3. SECTION-C contains **THREE** questions carrying **TEN** marks each and students has to attempt any **TWO** questions.

SECTION A

1. Answer briefly :

- a) Homology
- b) Pairwise sequence alignment
- c) Global alignment
- d) BLASTN
- e) Bit Score
- f) CLUSTAL X
- g) Cladogram
- h) PUBMED
- i) Gap penalty
- j) Dynamic programming



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SECTION-B

2. Write a note on Hidden Markov Model.
3. Differentiate between PAM and BLOSUM matrices.
4. Explain the algorithm of BLAST.
5. Write an overview of Bioinformatics.
6. Describe the Unrooted tree formation.

SECTION-C

7. Write a note on Database Management System.
8. Discuss the different methods used for multiple sequence alignment.
9. What is the importance of E-journals and describe their features?

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**B.Sc. (BT) (2014 to 2017) (Sem.-6)
DRUG DESIGNING AND DRUG DELIVERY SYSTEM
Subject Code : BSBT-314
M.Code : 47070**

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt ANY FOUR questions.
- SECTION-C contains THREE questions carrying TEN marks each and students have to attempt ANY TWO questions.

SECTION-A

1. Define the following :

- Cellstrain
- Recombinant Protein
- Soft Drugs
- Docking
- ANDA
- Post Marketing Trial
- Matrix Drug Delivery System
- Microparticles
- Attenuated Vaccines
- Orange Book

SECTION-B

- Discuss the therapeutic potential of subunit vaccines.
- Discuss different methods of site specific drug delivery.
- Describe the activities in phase II clinical trials.
- Discuss the drawbacks of transdermal drug delivery.
- Discuss the applications of liposomes.

SECTION-C

- Discuss the structural modification of natural therapeutic compounds.
- Discuss the steps undertaken by FDA for drug approval.
- Discuss the preparation and applications of monoclonal antibodies.



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Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc.(BT) (2014 to 2017) (Sem.-6)

FERMENTATION TECHNOLOGY

Subject Code : BSBT-306

M.Code : 47066

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1) Write briefly :

- a) Write monod equation.
- b) Write importance of Aeration.
- c) What are the factors affecting on $K_L a$?
- d) Define a term of sterilization.
- e) Define a term of Biomass. Give two examples.
- f) Explain Fed batch culture.
- g) What is dilution rate?
- h) Define enzyme. Give two examples of enzyme.
- i) What are advantages of enzyme immobilization?
- j) Define scale-up and scale-down.

SECTION-B

- 2) What is drying and why it is important?
- 3) Describe Monod's growth kinetics.
- 4) Compare and contrast a batch and continuous bioreactor.
- 5) Explain the term of media optimization and Antifoam.
- 6) Write a short note on industrial application of enzyme.

SECTION-C

- 7) Discuss the various techniques for enzyme immobilization with suitable examples.
- 8) Explain in detail about the two different design approaches for continuous sterilization process.
- 9) What is downstream process technology? Outline in general the various steps in downstream process technology.



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B.Sc.(BT) (2013 to 2017) (Sem.-6)
FERMENTATION TECHNOLOGY
Subject Code : BSBT-306

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

Q.1 Write briefly :

- a) Define the terms chemostat and turbidostat.
- b) What is the role of chelators and inducers in the fermentation media? Name any.
- c) Write a short note on primary and secondary metabolites.
- d) What are the different methods of media sterilization?
- e) Enlist the various physio- mechanical methods of cell disruption
- f) What are the advantages and disadvantages of immobilized enzymes over free enzymes?
- g) Explain the terms differential, selective, enriched and complete media.
- h) What are microbial insecticides? Name any four microbial species capable of acting as insecticides.
- i) Write in brief about oilgeanous microbes.
- j) Explain the term supercritical fluid extraction.



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SECTION-B

- Q.2 Compare and contrast the design of batch and continuous sterilization process.
- Q.3 How will you define media formulation? Explain the various components used during media formulations.
- Q.4 Explain the theory of filtration. Also enlist various types of batch filters that can be used for the recovery of microbial cells.
- Q.5 Explain the various methods used for the production and purification of heterologous enzymes.
- Q.6 Explain the microbial production of biosurfactants and their importance in biotechnology.

SECTION-C

- Q.7 What is the significance of K_{ia} value? Explain the various factors affecting the K_{ia} values.
- Q.8 What do you mean by filter sterilization? Explain the theory of depth filters.
- Q.9 Explain the kinetics of batch and continuous cultures. How can biomass and metabolic productivities increased in both type of cultures.

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Total No. of Pages : 02

Total No. of Questions : 09

**B.Sc. (BT) (2013 to 2017) (Sem.-6)
DRUG DESIGNING AND DRUG DELIVERY SYSTEM**

Subject Code : BSBT-314

M.Code : 47070

Max. Marks : 60

Time : 3 Hrs.

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt ANY FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt ANY TWO questions.

SECTION-A

1. Answer the following :
 - a. Cell line
 - b. Monoclonal antibodies
 - c. Carrier mediated drug delivery
 - d. Post marketing Clinical trials
 - e. Transdermal patch
 - f. Nanoparticles
 - g. ANDA
 - h. Soft drugs
 - i. Recombinant proteins
 - j. Molecular mechanics



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SECTION-B

2. Discuss growth characteristics of finite cell line.
3. Discuss the method for obtaining viral vaccines from cell lines.
4. Discuss role of structural modification in drug design.
5. Discuss preformulation studies in clinical trial.
6. Discuss the composition of matrix transdermal patch.

SECTION-C

7. Describe the components, advantages and disadvantages of serum in animal cell culture medium.
8. Discuss the different types of ligands employed in site specific drug delivery.
9. Discuss the formulation and applications of microparticles.

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Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc.(BT) (2013 to 2017) (Sem.-6)

BIOINFORMATICS

Subject Code : BSBT-302

M.Code : 47064

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION A

1. Answer briefly :

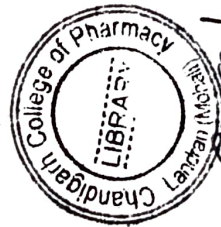
- a) HMM
- b) Database architecture
- c) Literature database
- d) Dot Matrix method
- e) Citations
- f) Smith waterman algorithm
- g) Protein database
- h) Global alignment
- i) Data life cycle
- j) Conserved sequence database

SECTION-B

- Q2 Discuss the PAM substitution matrix.
- Q3 Differentiate between primary and secondary databases.
- Q4 Write a note on importance of E-journals.
- Q5 Describe the relational database system.
- Q6 What is the significance of sequence similarity and how does it differ from homology?

SECTION-C

- Q7 Discuss the different methods used for phylogenetic analysis.
- Q8 Write a note on BLAST algorithm and its types.
- Q9 Elaborate on the Progressive and Iterative methods of Multiple Sequence Alignment.



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Total No. of Pages : 02

No. of Questions : 09

B.Sc.(BT) (2013 to 2017) (Sem.-6)

TOTAL QUALITY MANAGEMENT & ENTREPRENEURSHIP

Subject Code : BSBT-316

M.Code : 47071

e : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.

SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.

SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

Write short notes on the following :

- a. Contribution of management thinkers to TQM
- b. Quality of cost
- c. Problem solving tools
- d. Information management and decision making
- e. Promotion
- f. Techniques for analyzing quality process
- g. Partnership
- h. Private vs. public limited companies
- i. Philosophy of entrepreneurship
- j. Information systems organization



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SECTION-B

- 2) What is meant by competing branch market?
- 3) List and discuss the various important Entrepreneurial traits.
- 4) How does statistical process control contribute to quality management?
- 5) Briefly discuss the institutional support measures available for establishment of self-employment and entrepreneurial ventures.
- 6) Discuss the role of ISO *vis-à-vis* TQM in managing quality.

SECTION-C

- 7) Discuss the role of various regulatory agencies in respect to TQM.
- 8) Differentiate between self-employment and entrepreneurship. Comment on the scope of entrepreneurship in India.
- 9) Comment on the role and scope of TQM in India. Explain how has TQM developed and matured over the years in India.

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Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc.(BT) (2013 to 2017) (Sem.-6)

PLANT BIOLOGY

Subject Code : BSBT-304

M.Code : 47073

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Define :
 - a) What is virus indexing.
 - b) Define Embryogenesis?
 - c) What is Gametoclinal variation?
 - d) What is Cryotherapy?
 - e) What are Male plants?
 - f) How are adventitious buds induced?
 - g) Give the names of growth hormone for induction of callus formation.
 - h) What is an embryo rescue?
 - i) What is Meristem?
 - j) Give any two disadvantage of large scale production of plant cells?



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SECTION-B

2. What are somatic embryos?
 3. Which part of the plant is used for preparing virus free plant and why?
 4. What is the difference between agar culture and a suspension culture?
 5. Give the mechanism of orchid propagation.
 6. What are artificial seeds?
- SECTION-C**
7. Give different methods for germplasm conservation and their limitation.
 8. What is somaclonal variation? Give the molecular basis of these variations.
 9. Explain the different stages of micropropagation. Give its significance.

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Total No. of Pages : 02

Total No. of Questions : 09

B.Sc.(BT) (2013 to 2017) (Sem.-6)

BIOINFORMATICS

Subject Code : BSBT-302

M.Code : 47064

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is **COMPULSORY** consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION A

1. Answer briefly :

- a) HMM
- b) Database architecture
- c) Literature database
- d) Dot Matrix method
- e) Citations
- f) Smith waterman algorithm
- g) Protein database
- h) Global alignment
- i) Data life cycle
- j) Conserved sequence database



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SECTION-B

- Q2 Discuss the PAM substitution matrix.
- Q3 Differentiate between primary and secondary databases.
- Q4 Write a note on importance of E-journals.
- Q5 Describe the relational database system.
- Q6 What is the significance of sequence similarity and how does it differ from homology?

SECTION-C

- Q7 Discuss the different methods used for phylogenetic analysis.
- Q8 Write a note on BLAST algorithm and its types.
- Q9 Elaborate on the Progressive and Iterative methods of Multiple Sequence Alignment.

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Total No. of Questions : 09

Total No. of Pages : 02

B.Sc. (BT) (2013 to 2017) (Sem.-6)
DRUG DESIGNING AND DRUG DELIVERY SYSTEM
Subject Code : BSBT-314
M.Code : 47070

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
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3. SECTION-C contains **THREE** questions carrying **TEN** marks each and students have to attempt **ANY TWO** questions.

SECTION-A

1. Answer the following :

- a. Cell line
- b. Monoclonal antibodies
- c. Carrier mediated drug delivery
- d. Post marketing Clinical trials
- e. Transdermal patch
- f. Nanoparticles
- g. ANDA
- h. Soft drugs
- i. Recombinant proteins
- j. Molecular mechanics



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SECTION-B

2. Discuss growth characteristics of finite cell line
3. Discuss the method for obtaining viral vaccines from cell lines.
4. Discuss role of structural modification in drug design.
5. Discuss preformulation studies in clinical trial.
6. Discuss the composition of matrix transdermal patch.

SECTION-C

7. Describe the components, advantages and disadvantages of serum in animal cell culture medium.
8. Discuss the different types of ligands employed in site specific drug delivery.
9. Discuss the formulation and applications of microparticles.

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B.Sc.(BT) (2013 to 2017) (Sem.-6)
FERMENTATION TECHNOLOGY
Subject Code : BSBT-306

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

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3. SECTION-C contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION-A

Q.1 Write briefly :

- a) Define the terms chemostat and turbidostat.
- b) What is the role of chelators and inducers in the fermentation media? Name any.
- c) Write a short note on primary and secondary metabolites.
- d) What are the different methods of media sterilization?
- e) Enlist the various physio- mechanical methods of cell disruption
- f) What are the advantages and disadvantages of immobilized enzymes over free enzymes?
- g) Explain the terms differential, selective, enriched and complete media.
- h) What are microbial insecticides? Name any four microbial species capable of acting as insecticides.
- i) Write in brief about oligoceanous microbes.
- j) Explain the term supercritical fluid extraction.



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- Q.2 Compare and contrast the design of batch and continuous sterilization process.
- Q.3 How will you define media formulation? Explain the various components used during media formulations.
- Q.4 Explain the theory of filtration. Also enlist various types of batch filters that can be used for the recovery of microbial cells.
- Q.5 Explain the various methods used for the production and purification of heterologous enzymes.
- Q.6 Explain the microbial production of biosurfactants and their importance in biotechnology.

SECTION-C

- Q.7 What is the significance of K_d value? Explain the various factors affecting the K_d values.
- Q.8 What do you mean by filter sterilization? Explain the theory of depth filters.
- Q.9 Explain the kinetics of batch and continuous cultures. How can biomass and metabolic productivities increased in both type of cultures.

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Total No. of Questions : 09

Total No. of Pages : 02

B.Sc.(BT) (2013 to 2017) (Sem.-6)
DRUG DESIGNING AND DRUG DELIVERY SYSTEM
Subject Code : BSBT-314
Paper ID : [F0230]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt ANY FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt ANY TWO questions.

SECTION-A

Q1 Answer the following :

- a) Name a therapeutic product that is commonly produced using cell lines.
- b) The antibodies are secreted by T cells (True/False)
- c) Humulin stands for _____
- d) What is the main advantage of site specific delivery of drugs?
- e) Name any viral vaccine
- f) Why are clinical trials important parts of drug development?
- g) Define liposomes
- h) US-Food and Drug Authority is involved in regulating the drugs entering the market. (True/False)
- i) Mention one advantage of using nanoparticles for drug delivery.
- j) What is the difference between a biologic and a drug?

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SECTION-B

- Q2 Name five cell culture products which are used as therapeutics and mention one use of each.
- Q3 Write a note on nanoparticulate systems for delivery of drugs.
- Q4 Discuss Newtonian mechanics to describe the physical basis behind the molecular models.
- Q5 Enlist the factors that affect the permeation of drug through skin.
- Q6 Highlight the modification strategies for natural therapeutic agents.

SECTION-C

- Q7 a) Differentiate between monoclonal and polyclonal antibodies. Explain the procedure to produce monoclonal antibodies with the help of a diagram.
b) Discuss the chemical approaches used in site specific delivery of therapeutic entities.
- Q8 Schematically explain the drug development process from discovery to commercialization.
- Q9 Explain the stepwise process to obtain recombinant proteins for biomedical applications. Use specific example if required.



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Roll No. _____
Total No. of Questions : 09

Total No. of Pages : 02

B.Sc.(BT) (2013 to 2017) (Sem.-6)
TOTAL QUALITY MANAGEMENT & ENTREPRENEURSHIP
Subject Code : BSBT-316
Paper ID : [F0231]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

Q1) Write notes on the following :

- a. Quality of cost
- b. Role of TQM
- c. ISO 9000
- d. Statistical process control
- e. FDA agency
- f. Information system organization.
- g. Pricing and promotion
- h. Partnership.
- i. Cooperative society
- j. Private limited companies

SECTION-B

- Q2) What is meant by economics of quality?
- Q3) Explain the concept of problem solving tools.
- Q4) Discuss the inter-dependence of information management and decision making.
- Q5) What are the essential traits of a successful entrepreneur?
- Q6) Discuss the various types of business organizations. Give examples.

SECTION-C

- Q7) Discuss the concept of Total Quality Management. Discuss its functions in detail. How is it useful for a budding entrepreneur?
- Q8) Explain the philosophy of entrepreneurship. Discuss and differentiate between self-employment and entrepreneurship.
- Q9) Discuss the support provided by various agencies for entrepreneurial ventures in India.



B.Sc. (BT) (Sem. – 6)
BIOINFORMATICS
M Code: 47064
Subject Code: BSBT-302
Paper ID: [F0227]

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION A

I. Answer briefly:

- a) Similarity
- b) References
- c) Relational Database system
- d) PAM matrix
- e) E Value
- f) CLUSTALW
- g) Phylogram
- h) PMC
- i) Gap penalty
- j) E-journals

2. Describe the Needleman-Wunsch algorithm.
3. Differentiate between primary and secondary databases.
4. Explain the algorithm of BLAST.
5. Write a note on the importance of gap penalties.
6. Describe the Progressive Multiple sequence alignment.

SECTION C

7. Explain the different types of substitution matrices.
8. Discuss the different types of databases. Give examples of each.
9. Describe the methods of Multiple Sequence alignment.



B.Sc. (BT) (Sem. - 6)
PLANT BIOLOGY
M Code: 47073
Subject Code: BSBT-304
Paper ID: [F0243]

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

- SECTION-A is **COMPULSORY** consisting of TEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION A

- a) Why is Agar cultures laborious?
b) What is a spin filter bioreactor?
c) Define micropropagation.
- d) In which type of plants protocorm is used as explants?
e) What is virus indexing?
f) Define "Gynogenesis"
g) What are "Double haploids"
h) What is "embryo-nurse endosperm" culture?
i) Define germplasm?
j) What are Growth retardants?



- Discuss the various problems faced in large scale culture of plant cells?
- How are virus free plants established through shoot meristem cultures?
- What do you understand by analytical breeding?
- What do you mean by shortening of breeding cycle?
- How do you preserve germplasm by slow growth cultures?

SECTION C

- How are plant bioreactors different from microorganism bioreactors? Discuss in detail the modifications made in plant bioreactors?
- Discuss in details how somaclonal variations are created in culture and what are its applications?
- Describe the method of Cryopreservation with its advantages and limitations?

Roll No. _____
Total No. of Questions: 09

Total No. of Pages: 02

B.Sc. (BT) (Sem. - 6)
TOTAL QUALITY MANAGEMENT AND ENTREPRENEURSHIP
M Code: 47071
Subject Code: BSBT-316
Paper ID: [F0231]

Time: 3 Hrs.

Max. Marks: 60

SECTION B

2. What are the dimensions of quality? Discuss them.
3. What are the barriers to TQM. Implementation? How are they eliminated?
4. Discuss the role of Various regulatory bodies involved in total quality management.
5. What are the various types of organizations? Explain briefly about each of them.
6. What do you understand by entrepreneurship? What is its scope and philosophy.

SECTION C

7. Discuss Quality as a means to success in a competitive and global environment
8. Distinguish between entrepreneurship and self-employment. What is its importance in India?
9. What do you understand by partnership? Bring out the difference between private and public limited companies.

SECTION A

1. a) List down the pillars of TPM.
- b) Explain the need for the quality systems in an organization.
- c) What is the purpose of Pareto Diagrams?
- d) What is the role of TFA?
- e) What do you understand by sole proprietorship?
- f) Explain the term franchising.
- g) Explain Pareto analysis.
- h) What is the purpose of ISO 9000 quality system?
- i) What do you understand by information management in an organization?
- j) What do you understand by Kaizen?



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Total No. of Questions : 09

Total No. of Pages : 02

B.Sc.(BT) (2013 to 2017) (Sem.-6)
FERMENTATION TECHNOLOGY
Subject Code : BSBT-306
Paper ID : [F0229]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

- 1) Write briefly :
 - a) What do you mean by cell disruption?
 - b) Define sterilization.
 - c) Define enzyme and enzyme activity.
 - d) What do you mean by scale up?
 - e) What are the factors affecting on K_L ?
 - f) What do you mean by aseptic operations?
 - g) What is the volumetric oxygen transfer coefficient?
 - h) What do you mean by downstream processing?
 - i) What do you mean by drying?
 - j) What do you mean by immobilization?

SECTION-B

- 2) Discuss microbial growth kinetics.
- 3) Write a note on continuous sterilization.
- 4) Explain the theory of centrifugation.
- 5) List five applications of enzyme.
- 6) Write a note on microbial insecticides.

SECTION-C

- 7) Explain different ways of protein precipitation.
- 8) Explain microbial production of biosurfactants and their importance.
- 9) Write advantages and disadvantages of immobilization. Discuss the various methods in details.



Roll No.

Total No. of Pages: 02

Total No. of Questions: 09

**B.Sc. (BT) (Sem. - 6)
DRUG DESIGNING AND DRUG DELIVERY SYSTEM**

M Code: 47070

Subject Code: BSBT-314

Paper ID: [F0230]

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION A

1. Define
 - a) Serum free medium
 - b) Senescence
 - c) Molecular mechanics
 - d) Lead compound
 - e) Post marketing clinical trial
 - f) Docking
 - g) Transdermal drug delivery system
 - h) Liposomes
 - i) Live vaccines
 - j) New drug application

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SECTION B

2. Discuss the therapeutic potential of attenuated vaccines.
3. Discuss role of ligands in site specific drug delivery.
4. Describe the activities in phase II clinical trials.
5. Discuss the rationale of transdermal drug delivery.
6. Discuss the applications of liposomes.

SECTION C

7. Discuss the mechanism of molecular modeling.
8. Discuss the different phases drug approval by FDA.
9. Discuss the technique of raising monoclonal antibodies.

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B.Sc. (BT) (Sem. - 6)
FERMENTATION TECHNOLOGY

M Code: 47066

Subject Code: BSBT-306

Paper ID: [F0229]

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION A

- a) What are antifoam agents?
- b) Justify how agitation is complementary to aeration during fermentation.
- c) Enlist major downstream processing methods.
- d) Enlist different types of rheologies for fermentation fluids.
- e) Obtain an expression for cell-concentration in continuous culture as a function of time.
- f) Discuss how does oxygen transfer takes place in culture flasks?
- g) Justify the statement "Microbial conversions are autocatalytic".
- h) Discuss the concept of repeated fed-batch culture.
- i) Deduce expression for decimal reduction time for sterilization of fluids.
- j) Describe the importance of critical dissolved oxygen concentration.



2 Describe the kinetics of heat sterilization. Justify the concept of HTST for any continuous sterilization process.

3 Describe why foam is considered as undesirable phenomena. Also explain the strategy to combat the excessive foam formation during any aerobic fermentation.

4 Give a brief account on microbial insecticides.

5 Explain the merits and demerits of sulphite oxidation technique for $k_L a$ assessment in detail.

6 Define g-number. Discuss the factors responsible for increase in particle velocity in a given centrifuge.

SECTION C

7 Give a detailed account on the microbial production of the bio surfactants and their industrial significance.

8 For a Fed-batch system, explain what is understood by quasi-steady-state. Also derive an expression for concentration of cell mass and product prevailing in a variable volume fed-batch culture.

9 Invertase is immobilised in ion-exchange resin of average diameter 1 mm. The amount of enzyme in the beads is measured by protein assay as 0.05 kg m^{-3} . 20 cm^3 beads are packed into small column reactor; 75 ml sucrose solution at a concentration of 16mM is pumped rapidly through the bed. In another reactor an identical quantity of free enzyme is mixed into the same volume of sucrose solution. Assume the kinetic parameters for free and immobile enzyme are equal: K_m is 8.8 mM and the turnover number is 2.4×10^3 molol glucose (enzyme) $^{-1} \text{ s}^{-1}$. The effective diffusivity of sucrose in the ion-exchange resin is $2 \times 10^{-6} \text{ cm}^2 \text{ s}^{-1}$.

a) What is the rate of reaction by free enzyme?

b) What is the rate of reaction by immobilised enzyme?

Make suitable assumptions for any missing data.

Roll No. _____

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc.(BT) (2013 to 2017) (Sem.-6)
BIOINFORMATICS

Subject Code : BSBT-302

Paper ID : [F0227]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION A

1. Answer briefly :

- a. Data abstraction
- b. PubMed
- c. What does the number 60 signify in BLOSUM60?
- d. Dynamic Programming
- e. TrEMBL
- f. Cladogram and Phylogram
- g. Log Odd Score
- h. tRastx
- i. Define PAM120
- j. E value

SECTION B

2. Differentiate between Primary and Secondary databases. Explain giving suitable examples.
3. Describe the salient features of PDB database.
4. Discuss briefly the *insilico* applications of Bioinformatics.
5. Describe the concept of PAM matrices as given by Margaret Dayhoff.
6. Explain BLAST algorithm. What are the applications of using BLAST?

SECTION C

7. Explain the Progressive Alignment method for Multiple Sequence Alignment. Name a few tools for performing MSA.
8. Explain the Maximum Parsimony method of Phylogenetic estimation.
9. What are Dotplots and add a note on their applications? Explain the concept of window size and stringency in dotplots.



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