

**FIRST SEMESTER (CBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2020**

Biotechnology

BTY 1C 02—INDUSTRIAL AND ENVIRONMENTAL BIOTECHNOLOGY

Time : Two Hours

Maximum : 60 Marks

Section A

*Answer at least **eight** questions.*

Each question carries 3 marks.

All questions can be attended.

Overall Ceiling 24.

1. What is a Patent ?
2. What is Salami ?
3. Define a Vaccine.
4. What are Trickle filters ?
5. Define Biosorption.
6. What are Feeder cells ?
7. Explain the term 'Scale-up of fermentation'.
8. What is TLC ?
9. Define Bioenergy.
10. Name any *four* commonly used chemical sterilization agents.
11. Name any *four* natural media used in Animal cell culture.
12. Write the principle behind Density gradient centrifugation.

(8 × 3 = 24 marks)

Turn over

Section B

*Answer at least **five** questions.*

Each question carries 5 marks.

All questions can be attended.

Overall Ceiling 25.

13. Write notes on MCDB media.
14. Describe Biological indicators with suitable example.
15. Explain the different methods of water purification.
16. Describe the term biological filtration.
17. Explain about the downstream processing in fermentation.
18. Explain about the advantage and disadvantage of continuous fermentation.
19. What are Bioplastics ? Types of bioplastics.

(5 × 5 = 25 marks)

Section C

*Answer any **one** question.*

The question carries 11 marks.

20. Write an essay on the isolation and screening of industrially important micro-organism from soil samples.
21. Explain about the main parts of a fermenter with its specific functions.

(1 × 11 = 11 marks)

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BTY 1C 01—ENVIRONMENTAL BIOTECHNOLOGY

Time : Two Hours

Maximum : 60 Marks

Section A (Short Answers)

*Answer at least **eight** questions.*

Each question carries 3 marks.

All questions can be attended.

Overall Ceiling 24.

1. Define the term Ecosystem.
2. What is Habitat fragmentation ?
3. Expand the term PGPR.
4. What is a Biome ?
5. What is green chemistry ?
6. What is CFCs ?
7. What is an invasive species ?
8. Expand the term EOP treatment.
9. Define a loamy soil.
10. What is a Food web ?
11. Define Behavioural ecology.
12. Write the relation between soil pH and nutrient availability.

(8 × 3 = 24 marks)

Turn over

Section B (Paragraph)

Answer at least **five** questions.

Each question carries 5 marks.

All questions can be attended.

Overall Ceiling 25.

13. Write note on Nitrogen cycle.
14. What are the causes and effects of Ozone depletion ?
15. What is Eutrophication ? Write the causes and effects of Eutrophication.
16. What is Acid rain ? Explain the causes and effects of Acid rain.
17. What is soil remediation ? Explain the different technique used for this.
18. Explain about the different biological pollution control methods.
19. What are the 5 major causes of biodiversity loss ?

(5 × 5 = 25 marks)

Section C (Essay Type)

Answer any **one** question.

The question carries 11 marks.

20. Write an essay on Biodiversity, types and its importance.
21. Explain the different types of interaction between organism in an ecosystem with suitable examples.

(1 × 11 = 11 marks)

FIRST SEMESTER (CBCSS—UG) DEGREE EXAMINATION, NOVEMBER 2020

Biotechnology

BTY 1B 01—CELL BIOLOGY

Time : Two Hours

Maximum : 80 Marks

Section A (Short Answers)*Answer at least **eight** questions.**Each question carries 3 marks.**All questions can be attended.**Overall Ceiling 24.*

1. What is a Karyotype ?
2. What are Chaperonins ?
3. Explain the Cell theory.
4. What are Peroxisomes ?
5. Explain Exocytosis.
6. Define Osmosis.
7. What are Flagella ?
8. Short note on Microfilaments.
9. What are Cisternae ?
10. What are Polyribosomes ?
11. Explain the resolution power of a microscope.
12. What are Telomeres ?

(8 × 3 = 24 marks)

Section B (Paragraph)*Answer at least **five** questions.**Each question carries 5 marks.**All questions can be attended.**Overall Ceiling 25.*

13. Excessive or insufficient Apoptosis can contribute to disease. Explain.
14. What are nucleosomes ? Explain the structural organization of nucleosomes.

Turn over

15. Distinguish transporters and channels.
16. Explain about the principle behind fluorescent microscopy. What are the advantages of fluorescent microscopy?
17. What are stem cells and write its applications?
18. Distinguish the protein synthesis in eukaryotic and prokaryotic systems.
19. Explain the structure and function of mitochondrion.

(5 × 5 = 25 marks)

Section C (Essay Type)

*Answer any **one** question.
The question carries 11 marks.*

20. Explain the main stages of mitosis in an animal cell with suitable diagram.
21. Compare the structural organization of prokaryotic and eukaryotic cell with suitable diagram.

(1 × 11 = 11 marks)

**FIRST SEMESTER B.A./B.Sc. DEGREE EXAMINATION
NOVEMBER 2020**

(CUCBCSS)

Biotechnology

BTY 1B 01—CELL BIOLOGY

Time : Three Hours

Maximum : 80 Marks

Section A

Answer any two out of four questions in about 1500 words.

Each question carries 10 marks.

1. Comment on the importance of the Miller-Urey experiment in understanding the origin of life on earth.
2. Describe the structure of chloroplasts.
3. What is the difference between mitosis and meiosis in terms of their biological function ?
4. What are the morphological, chemical and functional similarities and differences between lysosomes and peroxisomes ?

(2 × 10 = 20 marks)

Section B

Answer any seven out of fourteen questions in about 750 words.

Each question carries 5 marks.

5. What are cytoplasmic inclusions ?
6. What is compartmentalization of cells ?
7. Why are mitochondria considered the “power plants” of aerobic cells ?
8. What is the endosymbiotic hypothesis regarding the origin of mitochondria ?
9. What are the functions of the cytoskeleton ?
10. What is the structure of cilia and flagella ?
11. Why should a cell die or undergo apoptosis ?
12. What are the uses of stem cells ?

Turn over

13. Briefly describe protein synthesis in cells.
14. During photosynthesis, what is the purpose of photolysis of water ?
15. How are proteins secreted from cells ?
16. How do cells respond to signals ?
17. What are glyoxysomes ?
18. How do prokaryotic cells divide ?

(7 × 5 = 35 marks)

Section C

Answer **all** questions in about 300 words.

Each question carries 3 marks.

19. What chemical substances compose the plasma membrane ?
20. What are the functions of plant cell vacuoles ?
21. What are the three main types of passive transport ?
22. What is the function of chromatin ?
23. What are cell adhesion molecules ?

(5 × 3 = 15 marks)

Section D

Answer **all** questions in about 200 words.

Each question carries 2 marks.

24. What are the two main groups into which cells are classified ?
25. What is the molecule responsible for the absorption of light energy during photosynthesis ?
26. What is the difference between osmosis and diffusion ?
27. What is the function of plasmodesmata ?
28. What is Cancer ?

(5 × 2 = 10 marks)

FIRST SEMESTER (CBCSS—UG) DEGREE EXAMINATION, NOVEMBER 2021

Biotechnology

BTY 1C 02—INDUSTRIAL AND ENVIRONMENTAL BIOTECHNOLOGY

(2019 to 2020 Admissions)

Time : Two Hours

Maximum : 60 Marks

Section A (Short Answer Type Questions)*Answer any ten questions.**Each question carries 2 marks.*

1. RBC.
2. Liquid nitrogen.
3. Crystallization.
4. Surface fermentation.
5. Fed - batch culture.
6. Solvent extraction.
7. Define patent & types of patent.
8. Presumptive test.
9. Biological Indicators.
10. Bioplastics.
11. Youghurt.
12. Enrichment culture method.

(10 × 2 = 20 marks)

Section B (Paragraph Type Questions)*Answer any six out of seven.**Each question carries 5 marks.*

13. Biogas production from food waste.
14. Bacteriological examination of water.
15. What are the criteria for patent ?

Turn over

16. Write an account on bioassay guided fractionation.
17. Describe the industrial production of penicillin and the methods for its purification.
18. Explain inoculum build up in bioprocess.
19. Isolation and screening of antibiotic producers.

(6 × 5 = 30 marks)

Section C (Essay Type Questions)

*Answer any **one** questions,
which carries 10 marks.*

20. Describe with the help of a flow chart a typical industrial fermentation process.
21. Explain in detail biological waste water treatment methods.

(1 × 10 = 10 marks)

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NOVEMBER 2021**

Biotechnology

BTY 1C 01—ENVIRONMENTAL BIOTECHNOLOGY

(2019—2020 Admissions)

Time : Two Hours

Maximum : 60 Marks

Section A (Short Answer Type Questions)

Answer any ten.

Each carries 2 marks.

1. Importance of Sulphur cycle.
2. Any four factors effect soil formation.
3. Grassland ecosystem.
4. Demography.
5. Ecological succession.
6. Any four factors influence nutrient availability in soil.
7. What are CFCs ?
8. Phytoremediation.
9. What is green manure ?
10. Abiotic factors of ecosystem.
11. Acid rain.
12. What are the four major characteristics of a community ?

(10 × 2 = 20 marks)

Section B (Paragraph Type Questions)

Answer any six out of seven.

Each carries 5 marks.

13. Illustrate pond as atypical ecosystem.
14. Explain how end pipe treatment useful in pollution control.

Turn over

15. Describe importance of carbon cycle.
16. Explain any four-plant microbe interaction.
17. Discuss different types of aquatic pollutions.
18. What are the causes of greenhouse effect ?
19. How to preserve non-replaceable resources ?

(6 × 5 = 30 marks)

Section C (Essay Type Questions)

Answer any one.

Each carries 10 marks.

20. Explain how human activities disturbed ecosystem.
21. Describe symbiotic nitrogen fixation and explain the role of microbes in nitrogen cycle.

(1 × 10 = 10 marks)

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NOVEMBER 2021**

Biotechnology

BTY 1B 01—CELL BIOLOGY

(2019—2020 Admissions)

Time : Two Hours

Maximum : 60 Marks

Section A (Short Answer Type Questions)

Answer any ten.

Each carries 2 marks.

1. Microtubules.
2. Any four functions of cell.
3. Peroxisomes.
4. Endocytosis and exocytosis.
5. Significance of meiosis.
6. G1 phase.
7. ABC transporter.
8. RB gene and p53 gene.
9. Phase contrast microscope.
10. Diversity of cell size and shape.
11. Glucose transporters.
12. Any four characteristics of cancer cells.

(10 × 2 = 20 marks)

Section B (Paragraph Type Questions)

Answer any six out of seven.

Each carries 5 marks.

13. Explain various functions of endoplasmic reticulum.
14. Explain the working mode of TEM.

Turn over

15. Give an account on various microbodies present in the cell.
16. Structure and function of Golgi complex.
17. Explain the solenoid structure of nucleosome.
18. Structure and function of flagella.
19. Give an account on extracellular matrix.

(6 × 5 = 30 marks)

Section C (Essay Type Questions)

*Answer any one.
It carries 10 marks.*

20. Explain different types of membrane transport.
21. Explain the structure and function of plasma membrane.

(1 × 10 = 10 marks)

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Biotechnology

BTY 1C 02—INDUSTRIAL AND ENVIRONMENTAL BIOTECHNOLOGY

(2021 Admissions)

Time : Two Hours

Maximum : 60 Marks

Section A

*Answer atleast **eight** questions.*

Each question carries 3 marks.

All questions can be attended.

Overall ceiling 24.

1. Major four contribution of Louis Pasture.
2. What is low volume high value product ?
3. Affinity chromatography.
4. Structure of Penicillin G.
5. Recombinant Vaccine.
6. Copywrite.
7. Biosorption.
8. Trickling filter.
9. MPN.
10. Fluidized bed reactor.
11. Antiform agents.
12. Impingement.

(8 × 3 = 24 marks)

Turn over

Section B

*Answer atleast **five** questions.*

Each question carries 5 marks.

All questions can be attended.

Overall ceiling 25.

13. Explain the fermentative production of Acetic acid.
14. Describe different Statistical methods employed for media formulation.
15. Explain anaerobic wastewater treatment.
16. With the help of diagram explain a typical bioreactor.
17. Explain different water purification methods.
18. Describe how will you isolate amylase producing organism from soil sample.
19. Merits and demerits of IPR.

(5 × 5 = 25 marks)

Section C

*Answer any **one** question.*

Each question carries 11 marks.

20. Write an essay on chromatographic techniques employed in the purification of microbial enzymes.
21. Describe different methods employed for the industrial effluent treatment.

(1 × 11 = 11 marks)

FIRST SEMESTER (CBCSS—UG) DEGREE EXAMINATION, NOVEMBER 2021

Biotechnology

BTY 1C 01—ENVIRONMENTAL BIOTECHNOLOGY

(2021 Admissions)

Time : Two Hours

Maximum : 60 Marks

Section A (Short Answer Type Questions)*Answer at least **eight** questions.**Each question carries 3 marks.**All questions can be attended.**Overall Ceiling 24.*

1. Components of biotic factors.
2. Greenhouse effect.
3. What is succession ?
4. Biodiversity.
5. Biomagnification.
6. Eutrophication.
7. Four characteristics of a community.
8. Any four renewable energy source.
9. Commensalism.
10. Distinguish habitat and niche.
11. Ecological pyramid.
12. Biosphere.

(8 × 3 = 24 marks)

Section B (Paragraph Type Questions)*Answer at least **five** questions.**Each question carries 5 marks.**All questions can be attended.**Overall Ceiling 25.*

13. What is green chemistry ? Explain industrial application of green chemistry.
14. Explain water cycle and its significance.

Turn over

15. Discuss the environmental impact of use of conventional fuels.
16. Discuss Primary, secondary and cyclic succession.
17. Explain different types of bioleaching and importance of bioleaching.
18. Give brief account on different types of ecosystem.
19. Discuss various types of plant-microbe interactions and their significance.

(5 × 5 = 25 marks)

Section C (Essay Type Questions)

*Answer any one question.
The question carries 11 marks.*

20. Discuss about various non-conventional energy resources and explain how it preserve.
21. Hazardous waste is a threat to the society and environment, explain how this can solve by biological methods.

(1 × 11 = 11 marks)

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NOVEMBER 2021**

Biotechnology

BTY 1B 01—CELL BIOLOGY

(2021 Admissions)

Time : Two Hours

Maximum : 60 Marks

Section A (Short Answer Type Questions)

*Answer at least **eight** questions.*

Each question carries 3 marks.

All questions can be attended.

Overall Ceiling 24.

1. What is MPF ?
2. Chromatin.
3. Scanning electron microscope.
4. Group translocation.
5. Phases of cell cycle.
6. Embryonic stem cells.
7. Cell theory.
8. Central dogma.
9. Functions of Golgi complex.
10. Microfilaments.
11. Any *four* properties of Cell.
12. Structure of tRNA.

(8 × 3 = 24 marks)

Turn over

Section B (Paragraph Type Questions)

Answer at least five questions.

Each question carries 5 marks.

All questions can be attended.

Overall Ceiling 25.

13. Write short note on extrinsic and intrinsic protein.
14. Describe any *four* molecules involved in cell adhesion.
15. Describe electron transport system.
16. Explain the structure and function of cilia and flagella.
17. Compare, plant and animal cells highlighting distinguishing features of each.
18. What are second messengers ? Explain their functions.
19. Explain the structural and functional characteristics of cancer cells.

(5 × 5 = 25 marks)

Section C (Essay Type Questions)

Answer any one question.

The question carries 11 marks.

20. What is Apoptosis ? Explain extrinsic and intrinsic pathway of apoptosis.
21. Discuss the different check points in cell cycle and explain how they regulate cell cycle.

(1 × 11 = 11 marks)