

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Sixth Semester

Microbiology – Core

MICROBIAL BIOTECHNOLOGY

(For those who joined in July 2017-2019)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

- Who developed the chemical techniques to synthesize polynucleotides?
 - Barbara McClintock
 - James Watson
 - Fredrick Sanger
 - H. Gobind Khorana

- What is the main enzyme component of Sanger sequencing?
 - Helicase
 - Gyrase
 - Nuclease
 - Polymerase

- Helicase
- Gyrase
- Nuclease
- Polymerase

- Which of the following gene detoxify herbicide bronoxynil?
 - Phosphinothricin acetyl transferase
 - Glutathione S-transferase (GST)
 - Nitrilase
 - All of these

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- Glutathione S-transferase (GST)
- Nitrilase
- All of these

- In transgenic plants that have been manipulated to express patho-genesis-related (PR) proteins all the time it has been shown that _____
 - These provide no protection at all against pathogens
 - Expression of one PR protein provides high levels of protection against many pathogens
 - Expression of two PR proteins provides some protection against a few pathogens
 - These proteins trigger the production of other antimicrobial defenses

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- These proteins trigger the production of other antimicrobial defenses

- Who gave the definition of Biotechnology?
 - The European Federation of Biotechnology (EFB)
 - National Center for Biotechnology Information (NCBI)
 - National Institutes of Health (NIH)
 - National Centre for Cell Science (NCCS)

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- Biolistics (Gene gun) is suitable for _____
 - Disarming pathogen vectors
 - Transformation of plant cells
 - Joining of DNA Vector
 - DNA Fingerprinting

- Disarming pathogen vectors

- Transformation of plant cells

- Joining of DNA Vector

- DNA Fingerprinting

- Introduction of DNA molecules into the recipient organism is termed as _____
 - Transformation
 - Translation
 - Transduction
 - Transcription

- Transformation

- Translation

- Transduction

- Transcription

- The first significant DNA sequence to be obtained was that of _____
 - Plasmid
 - Lambda
 - Lactose
 - Mammals

- Plasmid

- Lambda

- Lactose

- Mammals

- The controversy regarding the use of Bt corn is that it
 - Is potentially harmful to monarch butterflies
 - Is a potential allergen to humans
 - Both (a) and (b)
 - Can contaminate groundwater

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- Is a potential allergen to humans

- Both (a) and (b)

- Can contaminate groundwater

- Expression of antisense RNA in transgenic plants is a general method used to
 - Activate the expression of all genes in a biochemical pathway
 - Eliminate the expression of all genes in a biochemical pathway
 - Block the expression of virus coat protein genes
 - Reduce or eliminate the expression of individual genes

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- Eliminate the expression of all genes in a biochemical pathway

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PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

- (a) Define Microbial biotechnology? Write the concepts of it?
 - Define Microbial biotechnology? Write the concepts of it?

Or

- Briefly explain the history of Biotechnology?

12. (a) Explain the chemical method of DNA transformation?

Or

(b) Write note on Microinjection method of gene transfer?

13. (a) Explain the Sangers methods of DNA sequencing?

Or

(b) Briefly explain the method of primer walking sequencing?

14. (a) Write notes on Hybridoma technology?

Or

(b) Give an account on Herbicide resistant plants?

15. (a) Briefly explain the biotechnological production of Insulin?

Or

(b) Give an account on gene therapy?

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19. (a) Give an account on viral resistant transgenic plants?

Or

(b) Briefly explain the retroviral and embryonic stem cell methods in transgenic animals?

20. (a) Give an account on microbial biotechnological products of human therapeutic uses?

Or

(b) Briefly explain the Bt transgenic plants?

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Discuss about the application of rDNA technology?

Or

(b) Briefly explain the Milestone in Biotechnology?

17. (a) Briefly discuss about the gene delivery methods in Transformation?

Or

(b) Explain the methods of Enzyme immobilization and its application?

18. (a) Discuss in detailed about the new generation sequencing methods?

Or

(b) Write an essay on Genomics and also explain the method of shotgun sequencing?

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