

SCHOOL OF CHEMICAL AND LIFE SCIENCE
B.Sc.-M.Sc. INTEGRATED-BIOTECHNOLOGY
SEMESTER-II EXAMINATION, AUGUST 2022
PAPER CODE: BBC-GE02-B TH

PAPER TITLE: BIOTECHNOLOGY AND HUMAN WELFARE

Time: 3 Hours

Maximum Marks: 75

Attempt all questions. All parts of a question must be attempted in continuation. Start the answer to the next question on a new page. Cite examples and draw labeled diagrams wherever necessary.

Q1. All questions are compulsory in this section.

A. Fill in the blanks:

[1X10=10]

- I. _____ degradation is initiated by either a mono- or di-oxygenase.
- II. Highly chlorinated, highly oxidized C atoms are good electron targets for _____.
- III. The Nadep method of making miracle compost was first invented by a farmer named _____.
- IV. Vermicast is the end-product of the breakdown of organic matter by _____.
- V. _____ inhibits and _____ inhibits expression of nif genes.
- VI. Nitrogenase consumes _____ of ATP for every molecule of N_2 it reduces to NH_3 .
- VII. Cyanobacteria, autotrophic N-fixers, protect nitrogenase with specialized _____ cells.
- VIII. Bacteria encounter root; they are chemotactically attracted toward specific plant chemicals _____.
- IX. A _____ is a protein isolated from bacteria that cleaves DNA sequences at sequence-specific sites, producing DNA fragments with a known sequence at each end.
- X. _____ is a technique based on using the ability of DNA polymerase to synthesize new strand of DNA complementary to the offered template strand.

B. Give short answers to the following.

[1X5=5]

- I. What are live vaccines? Explain with example.
- II. Write different steps in Polymerase chain reaction.
- III. What is the genome (nucleic acid) of COVID19 Virus?
- IV. What is the genome (nucleic acid) of Monkey Pox Virus?
- V. How antibiotic and alcohol interaction is harmful?

Q2. Answer ANYONE of the following.

[1x15=15]

A) What is DNA fingerprinting? Discuss its principle and application. Elaborate the steps in DNA fingerprinting.

OR

B) What do you mean by protein engineering? Discuss the strategies used for protein engineering giving suitable example.

Q3. Answer ANYONE of the following.

[1x15=15]

A) What are four components of Transgenic Cotton and its mode of action with diagrammatic representation?

OR

B) Describe in detail about the types of reductive dehalogenation reactions and factors affecting rates of biodegradation in soil.

Q4. Answer ANYONE of the following.

[1x15=15]

A) Describe in detail about nodulation process and types of bacterial functions involved in nodulation and nitrogen fixation?

OR

B) What are bioplastics and give detail insight about the synthesis of PHB and Phb producing bacteria.

Q5. Answer ANY TWO of the following.

[2x7.5=15]

A) What are the different types of gene therapy? Highlight their advantages and disadvantages?

B) Discuss the development and significance of non-toxic therapeutic agents.

C) Give a detailed account of Human Genome Project. Highlight the significance of the project by giving suitable example.

D) What do you mean by recombinant live vaccines? How are such vaccines developed?

-----X-----