

24/8/22

SCHOOL OF CHEMICAL AND LIFE SCIENCE
B.Sc.-M.Sc. INTEGRATED-BIOTECHNOLOGY
SEMESTER-II EXAMINATION, AUGUST 2022

PAPER CODE: BBT-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?

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