

PHBT-103

Your Roll No.

SCHOOL OF CHEMICAL AND LIFE SCIENCES

JAMIA HAMDARD, NEW DELHI-110062

Ph.D. Course Work Examination, October 2023

Elective Paper: Plant Biotechnology and Human Welfare

Time: Three Hours

Maximum Marks: 100

(Write your Roll No. at the top immediately on receipt of this question paper)

Answer ALL questions. All parts of a question must be answered in continuation. Start answering each question on a new page. Cite examples and draw labeled diagrams.

Q (1). Attempt any Ten questions. Write a short answer (Not more than half a page).[10×2=20]

- A. What is gene silencing?
- B. Write any three differences between nuclear and chloroplast genomes.
- C. What is the copy number? Which technique is used to confirm the copy number of transgene?
- D. Write any three differences between cloning and expression vectors.
- E. What is Roundup Ready technology?
- F. Give any three examples of plant secondary metabolites with advantages.
- G. What are plant herbicides? Give an example with advantages and limitations.
- H. Write any three factors affecting the shelf life of fruits.
- I. Write the basic characteristics of a vector.
- J. What are plantibodies?
- K. Write three advantages and limitations of the transgenic approach.
- L. Describe any three roles of ethylene in the fruit ripening process.
- M. What is Bt cotton?
- N. What is biopharming?
- O. Write three differences between plasmid, cosmid, and phagmid vectors.

Q (2). Write a short note on any Four (Not more than two pages).[4×10=40]

- A. Golden rice
- B. Plant binary vectors
- C. Plant promoters
- D. Flavrsavr
- E. Mechanism behind the plant stress tolerance
- F. Male sterility in plants

Q (3). Attempt any Two questions. Write a detailed note (No limit of pages).[2×20=40]

- A. What are selectable markers? Provide examples of commonly used selectable markers and their significance in plant genetic engineering.
- B. Describe the molecular process of transfer of T-DNA from *Agrobacterium* to plant genome in detail.
- C. What are edible vaccines? Why plastome engineering is better for the production of edible vaccines?
- D. Describe briefly the genetic engineering strategy for the improvement of proteins and micronutrients in plants.
- E. Give a detailed account of variety development for enhanced production of secondary metabolites.
