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**NA—52—2023**

**FACULTY OF SCIENCE**

**B.Sc. (Second Year) (Fourth Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2023**

**(New Pattern)**

**BOTANY**

**Paper—IX**

**(Plant Metabolism and Biotechnology)**

**(Tuesday, 12-12-2023)**

**Time : 2.00 p.m. to 4.00 p.m.**

*Time—2 Hours*

*Maximum Marks—40*

*N.B. :—* (i) Attempt *all* questions.

(ii) Figures to the right indicate full marks.

(iii) Illustrate your answers with suitable diagrams.

1. Define photosynthesis. Describe Calvin cycle ( $C_3$ ) in photosynthesis. 15

*Or*

(i) Explain in detail mechanism of enzyme action. 8

(ii) Describe symbiotic nitrogen fixation in plants. 7

2. Describe in detail Agrobacterium mediated gene transfer in plants. 15

*Or*

(i) What are Cybrids ? Describe somatic hybridization in plants. 8

(ii) Synthetic seeds. 7

P.T.O.

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3. Write notes on any *two* of the following : 10

- (i) Fermentation
- (ii) Nitrification and denitrification
- (iii) Nutrient media in plant tissue culture
- (iv) NCBI.

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