

2023

Time - 3 hours

Full Marks - 60

Answer all groups as per instructions.

Figures in the right hand margin indicate marks.

*Candidates are required to answer
in their own words as far as practicable.*

Draw labelled diagrams wherever necessary.

GROUP – A

1. Fill in the blanks by choosing the correct answer and express in one word. (all) [1 × 8]

(a) The causes have ability to form a whole plant, a phenomenon called _____.

(i) dedifferentiation (ii) redifferentiation

(iii) differentiation (iv) regeneration

(b) Preservation of cell, tissue and organ in liquid nitrogen at -196°C is called _____.

(i) cryoprotection (ii) cryopreservation

(iii) freezing (iv) thawing

P.T.O.

(c) _____ are called molecular glue.

- | | |
|------------------|-----------------|
| (i) Helicase | (ii) DNA Gyrase |
| (iii) DNA Ligase | (iv) Protease |

(d) Transgenic tomatoes contain antisense construct of gene encoding enzyme _____.

- | | |
|-------------------------|---------------------------|
| (i) lipase | (ii) protease |
| (iii) polygalacturonase | (iv) β -glucosidase |

Express in one word :

- (e) The hormone used to facilitate cell division and root differentiation.
- (f) The development of embryo not from egg cell and any cell of embryosac.
- (g) Violet flower transgenic carnation with trade name.
- (h) Use of green plant and their associated micro-organism used to remove pollutants.

GROUP – B

2. Answer any eight of the following questions within two to three sentences each. [1½ × 8

- (a) What is totipotency ?
- (b) Define Androgenesis.

[3]

- (c) What is Microinjection ?
- (d) What is cosmid ?
- (e) What is germplasm conservation ?
- (f) What is BAC ?
- (g) What is Denaturation ?
- (h) What is superbug ?
- (i) What is T-DNA ?
- (j) Type-II Restriction Endonuclease ?

GROUP – C

3. Write notes on any eight of the following within 75 words each.

[2 × 8

- (a) Organogenesis
- (b) Callus
- (c) PUC 18
- (d) Electroporation
- (e) BT-Cotton
- (f) Golden Rice
- (g) Microprojectile Bombardment

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[4]

- (h) Reporter genes
- (i) Edible vaccines
- (j) Humulin

GROUP – D

4. Answer any four of the following questions within 500 words each.
- (a) Describe the role of vitamins and hormones in tissue culture. [6]
 - (b) Describe the various methods of protoplast fusion. [6]
 - (c) Describe PCR mediated gene cloning. [6]
 - (d) Give an account of construction of genomic and C-DNA libraries. [6]
 - (e) Explain the mechanism of T-DNA transfer into plant genome. [6]
 - (f) Describe the applications of biotechnology. [6]
 - (g) Describe the role of transgenic in bioremediation and industrial enzymes. [6]