2. Describe the process of protoplast isolation, culture and fusion. Comment on its significance.

Or

Describe about chloroplast and mitochondrial transformation.

3. Describe the process of transformation of plants by agrobacterium.

Or

Explain about methods of nuclear transformation.

4. Describe process of industrial production of secondary metabolites alkaloids.

Or

Comment on :

(a) Biodegradable plastic,

(b) PR protein.

✪ ✪ ✪ ✪ ✪ c ✪ ✪ ✪ ✪ ✪

G-3/306/21 **Roll No.……...**

M.Sc. III Semester Examination, April-2021

BIOTECHNOLOGY

Paper II

(Plant Biotechnology)

Time : 3 Hours] [Maximum Marks : 80

Note : *All questions are compulsory. Question Paper comprises of 3 sections.* ***Section A*** *is objective type/Multiple Choice questions with no internal choice.* ***Section B*** *is short answer type with internal choice.* ***Section C*** *is long answer type with internal choice.*

SECTION 'A'

(Objective Type Questions)

Choose the correct answer : **1 × 8 = 8**

1. To study factors responsible for the formation of adventive embryo, which culture is suitable :

(a) Androgenic culture (b) Endosperm culture

(c) Gynogenic culture (d) Nucellus culture

2. Which method is indirect method for DNA transfer in plant tissue :

(a) Agrobacterium mediated transformation

(b) Electroporation

(c) Microinjection

(d) Sonication

3. Cre//oxP recombination system was introduced by Lin *et al* in 2003 for multiple gene transfer in plant to overcome the problem of :

(a) Restriction exonuclease

(b) Restriction endonuclease-I

(c) Restriction endonuclease-II

(d) Restriction endonuclease-III

4. The media developed by Gamborg for cell suspension and callus culture and presently used for protoplast culture is :

(a) MS medium (b) White medium

(c) B_5 medium (d) N_6 medium

5. The variation in the restriction DNA fragment lengths between individuals of a species is called :

(a) RAPD (b) RFLP

(c) STS (d) SSCP

6. Single gene disease in man, plants and animal can be identified with :

(a) RAPD (b) RFLP

(c) STS (d) SSCP

7. Accurate analysis of allelic and mutational sequence variation may be detected by :

(a) SSCP (b) STS

(c) RAPD (d) None of these

8. The main function of PR—2 is :

(a) Cleaves β-1, 3-glucans

(b) Antifungal action

(c) Endochitinase action

(d) Chintinase action

SECTION 'B' **6 × 4 = 24**

(Short Answer Type Questions)

Note : *Answer the following questions in 250 words.*

1. Explain Somatic embryogenesis.

Or

Describe method of embroy culture.

2. Write about anther culture.

Or

Describe method of Ovary culture.

3. Comment on Ti and Ri plasmid.

Or

Comment on role of virulence gene.

4. Comment on Bt gene.

Or

Comment on herbicide resistant plant.

SECTION'C' **12 × 4 = 48**

(Long Answer Type Questions)

Note : *Answer the following questions in 500 words.*

1. Describe about composition and preparation method for plant tissue culture media.

Or

Describe protocol for initiation and maintenance of callus and suspension culture.