# LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

**M.Sc.** DEGREE EXAMINATION – **BIOTECHNOLOGY**

THIRD SEMESTER – **NOVEMBER 2024**

**PBT3MC01 – PLANT BIOTECHNOLOGY**

Date: 07-11-2024 Dept. No. Max. : 100 Marks

Time: 01:00 pm-04:00 pm

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| | **SECTION A – K1 (CO1)** | |
| | **Answer ALL the questions** | **(5 x 1 = 5)** |
| **1** | **Choose the best option** | |
| a) | The ability of every single plant cell to develop into whole plant.<br>i) Cryopsy ii) Cryopreservation iii) Totipotency iv) Parthenocarpy | |
| b) | Fusion products with the nucleus of one parent and extra-nuclear genome of the other parent cell.<br>i) Cybrid ii) Hybrid iii) Protoplast iv) Peroxisome | |
| c) | Select the widely used technique which involve the targeted removal or inactivation of a specific gene within an organism's genome.<br>i) Gene knock-in ii) Gene knock-out iii) TALEN iv) CRISPR | |
| d) | Red pigment that belongs to a group of chemicals called carotenoids.<br>i) Acetosyringone ii) Astaxanthin iii) Solanine iv) Sesquiterpene | |
| e) | Which committee plays a role in regulating genetically modified foods?<br>i) GEAC ii) USDA iii) ICAR iv) ICMR | |
| | **SECTION A – K2 (CO1)** | |
| | **Answer ALL the questions** | **(5 x 1 = 5)** |
| 2 | **Answer in one or two sentences** | |
| a) | Draw the chemical structure of 2,4-D. | |
| b) | Mention the advantages of syn seeds. | |
| c) | Define transgenic plant. | |
| d) | What are carotenoids? | |
| e) | Give the expansion for GEAC. | |
| | **SECTION B – K3 (CO2)** | |
| | **Answer any THREE of the following** | **(3 x 10 = 30)** |
| 3 | Discuss the role of growth hormones in plant tissue culture. | |
| 4 | Briefly explain the importance of RFLP markers. | |
| 5 | Describe the sonication assisted transformation technique. | |
| 6 | Illustrate the shikimic acid pathway in plants. | |
| 7 | Write a short note on intellectual property rights. | |

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| | **SECTION C – K4 (CO3)** |
| | **Answer any TWO of the following** **(2 x 12.5 = 25)** |
| 8 | Compare and contrast organogenesis and somatic embryogenesis with the help of an illustration. |
| 9 | Give an account on RAPD technique and its applications. |
| 10 | Briefly explain the nutraceutical values of algae. |
| 11 | Summarize your ideas about ethical issues in genetically modified foods. |
| | **SECTION D – K5 (CO4)** |
| | **Answer any ONE of the following** **(1 x 15 = 15)** |
| 12 | Justify the statement that virus resistant plants are produced through plant tissue culture. |
| 13 | Summarize on the progress of transcriptomics studies on plants. |
| | **SECTION E – K6 (CO5)** |
| | **Answer any ONE of the following** **(1 x 20 = 20)** |
| 14 | Elaborate on the mevalonic acid pathway in production of phytochemical compounds. |
| 15 | Discuss the importance of Nagoya protocol on biosafety and add a note on biosafety regulatory agencies. |

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