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GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

B. Tech Degree Examinations, June – 2021

(Sixth Semester)

BBTPC6010 – PLANT BIOTECHNOLOGY

(Biotechnology)

Time: 2 hrs

Maximum: 50 Marks

Answer ALL Questions**The figures in the right hand margin indicate marks.****PART – A: (Multiple Choice Questions)****(1 x 10 = 10 Marks)****Q.1. Answer ALL questions****[CO#] [PO#]**

- | | | | |
|---|--|---|---|
| a. Totipotency refers to _____. | | 1 | 1 |
| (i) Development of fruits from flowers in a culture | (ii) Development of an organ from a cell in a culture medium | | |
| (iii) Flowering in a culture medium | (iv) All of the above | | |
| b. Haploid plants can be obtained from_____ | | 1 | 1 |
| (i) Anther culture | (ii) Bud culture | | |
| (iii) Leaf culture | (iv) Root culture | | |
| c. In-plant tissue culture, the callus tissues are generated into a complete plantlet by altering the concentration_____. | | 2 | 1 |
| (i) Sugars | (ii) Amino acids | | |
| (iii) Hormones | (iv) Vitamins and minerals | | |
| d. Synthetic seeds are produced by the encapsulation of somatic embryos with_____. | | 2 | 1 |
| (i) Sodium acetate | (ii) Sodium nitrate | | |
| (iii) Sodium chloride | (iv) Sodium alginate | | |
| e. In which of the following conditions do the somaclonal variations appear? | | 2 | 1 |
| (i) Plants raised in tissue culture | (ii) Plants exposed to gamma rays | | |
| (iii) Plants growing in polluted soil or water | (iv) Plants transferred by a recombinant DNA technology. | | |
| f. Golden rice is | | 3 | 1 |
| (i) Hybrid rice developed by traditional plant breeding | (ii) A rice variety obtained by plant tissue culture | | |
| (iii) A rice variety obtained by recombinant DNA technology | (iv) None of the above | | |
| g. The modification of exogenous compounds by plant cells is called | | 3 | 1 |
| (i) Biotransformation | (ii) Bioconversion | | |
| (iii) Both i and ii | (iv) Biophytomodification | | |
| h. Bt cotton is a | | 4 | 1 |
| (i) A cotton variety obtained by crossing two different cotton plants | (ii) A cotton variety brought from South America | | |
| (iii) An insecticide sprayed on cotton plant | (iv) A transgenic cotton variety | | |
| i. Secondary metabolites are used by plant cells for_____ | | 4 | 1 |
| (i) Production of nucleic acids | (ii) For making plasma membrane | | |
| (iii) Morphological differentiation | (iv) All the above | | |
| j. Production of secondary metabolites by plant tissue culture technique is preferred because | | 4 | 1 |

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|-------------------------------------|--|
| (i) Production yield is very high | (ii) Aseptic conditions can be easily maintained |
| (iii) No skilled person is required | (iv) Product recovery is easy |

PART – B: (Short Answer Questions)

(2 x 5 = 10 Marks)

Q.2. Answer ALL questions

	[CO#]	[PO#]
a. What is Single cell culture?	1	1
b. What are the factors affecting somatic embryogenesis?	2	1
c. Define electroporation	3	1
d. How do weeds become resistant to herbicides?	3	1
e. What are the functions of primary and secondary metabolites in plants?	4	1

PART – C: (Long Answer Questions)

(6 x 5 = 30 Marks)

Answer ANY FIVE questions

	Marks	[CO#]	[PO#]
3. Explain microspore culture for haploid plant production	6	1	1
4. Write the composition of MS medium? Why sucrose is used in MS media?	6	1	1
5. What are synthetic seeds? When explants produce callus and forms embryo is called?	6	2	1
6. What are the possible outcome of protoplast fusion?	6	2	1
7. What are the benefits of genetic transformation?	6	3	1
8. How Bt cotton is different from normal cotton? Why did BT cotton fail in India?	6	3	
9. What are the phases of biotransformation?	6	4	1
10. How is secondary metabolite production related to microbial growth?	6	4	1

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