

U.G. 5th Semester Examination-2021**Molecular Biology & Biotechnology****[HONOURS]****Discipline Specific Elective (DSE)****Course Code : MBBT-DSE-T-505****(Plant Biotechnology)**

Full Marks : 40

Time : $2\frac{1}{2}$ Hours*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer any **five** of the following: $2 \times 5 = 10$
- a) What is totipotency?
 - b) What are the *in vitro* parameters that influence plant growth?
 - c) What is embryo rescue?
 - d) What is Photoautotrophic micro-propagation?
 - e) What is embryonic potential?
 - f) What are artificial seeds?
 - g) What is biological nitrogen fixation?
 - h) What is the difference between dedifferentiation and redifferentiation?

2. Answer any **two** of the following: $5 \times 2 = 10$
- a) Write a short note on initiation and sub culturing of callus.
 - b) Give an account on factors influencing organogenesis.
 - c) What is somaclonal variation? Write down the applications and limitations of somaclonal variation. $2+3$
 - d) Explain the role of nif gene in nitrogen fixation. Discuss the role of Rhizobium as biofertilizer. $3+2$
3. Answer any **two** of the following: $10 \times 2 = 20$
- a) What are the differences between monocot and dicot plant somatic embryogenesis? Why subculturing is necessary for routine maintenance of plant culture? Write down the procedure of ovule culture for the production of homozygous diploids. $4+2+4$
 - b) What is meristem culture? Write down the importance of meristem culture. Write a brief note on factors affecting cytodifferentiation. $2+3+5$

[Turn Over]

- c) What is haploid culture? Write down the significance of using haploid culture. Write a note on the mechanism causing somaclonal variations and its isolation and selection methods. 2+3+5
- d) What are gynogenic haploids? Name the factors effecting gynogenesis. What do you mean by diplodization. Write a note on chromosome elimination techniques for production of haploids in cereals. 2+2+2+4
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