

**Exam. Code : 103206**

**Subject Code : 1443**

**B.A./B.Sc. 6th Semester**

**BIOTECHNOLOGY**

**(Environmental Biotechnology and Plant Biotechnology)**

Time Allowed—3 Hours]

[Maximum Marks—75

**Note** :— Q. No. 1 is compulsory. The remaining 8 questions are in **FOUR** units and candidates are required to attempt **1** question from each unit.

1. All the following questions carry equal marks.

- (i) What is biotransformation ? Give example.
- (ii) Applications of cellulose degradation. Explain ?
- (iii) What is hard water and its significance.
- (iv) Name microorganism/s that fixes nitrogen in legumes
- (v) Which explant is most suitable for producing virus free plants and why ?
- (vi) Define Callus. How is it produced ?
- (vii) Name few chemicals used for dihaploidization ?
- (viii) Which explant is most suitable for producing triploids and why ?
- (ix) Define somaclonal variations. What are its various types ?
- (x) Define fusogen. Give one example.  $1.5 \times 10 = 15$

## UNIT—I

2. (a) What is the significance of methogenic bacteria ?  
(b) What is the significance of BOD and COD ?
3. Explain in detail the energy resources and their impact on our environment. What role biotechnology plays in the sustainable development ?

## UNIT—II

4. (a) Explain microbial nitrogen fixation.  
(b) What is 'Organic farming' ? How is it related to human health ?
5. Write about production of transgenics and their significance. How thuringensis toxin and other biological control mechanisms act to eliminate various insect swarms and pests in agricultural fields ?

## UNIT—III

6. (a) Write a note on *in vitro* pollination and fertilization.  
(b) Write a note on embryo rescue with suitable example.
7. Write in detail the structures and applications of various plant growth regulators. How shoot tips and axillary buds are used for micropropagation of elite species ?

## UNIT—IV

8. (a) What are practical applications of genetic transformation ?  
(b) What is the significance of producing cytoplasmic hybrids ?
9. Explain in detail how we can produce haploids and triploids. What are their applications in improving quality of various crops ?

4×15=60