

**Bs/BCC-14(T)**

**2025**

**(FYUGP)**

**( 6th Semester )**

**BOTANY**

**( MAJOR )**

**Paper : BCC-14(T)**

**( Plant Biotechnology )**

**Full Marks : 75**

**Pass Marks : 40%**

**Time : 3 hours**

**The figures in the margin indicate full marks  
for the questions**

- 1. (a) What is a totipotent cell? Describe the process of somatic embryogenesis.**

**3+12=15**

**Or**

- (b) Write short notes on the following :**

**7½×2=15**

- (i) Composition of nutrient media**  
**(ii) Applications of tissue culture**



2. (a) What are cloning vectors? Discuss a prokaryotic and a eukaryotic cloning vector with suitable diagrams.  $2+13=15$

Or

- (b) Write short notes on the following :  $7\frac{1}{2}\times 2=15$

- (i) Restriction mapping
- (ii) Restriction endonucleases

3. (a) Define gene cloning. Describe bacterial transformation and selection of recombinant clones.  $2+13=15$

Or

- (b) Write short notes on the following :  $7\frac{1}{2}\times 2=15$

- (i) cDNA libraries
- (ii) PCR-mediated gene cloning

4. (a) Describe the methods of electroporation and microinjection for direct gene transfer. 15

Or

- (b) Write short notes on the following :  $7\frac{1}{2}\times 2=15$

- (i) Selectable marker genes
- (ii) Agrobacterium-mediated gene transfer



5. (a) Briefly discuss the applications of biotechnology with examples. 15

Or

- (b) Write short notes on the following :  $7\frac{1}{2} \times 2 = 15$

(i) Biosafety concerns

(ii) Moondust carnations

★ ★ ★