

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

**2 0 2 5**

**( 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.

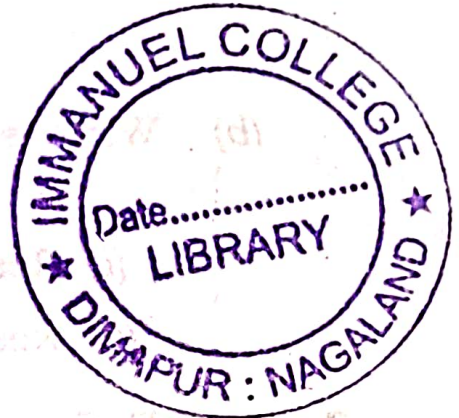
3+12=15

Or

- (b) Write short notes on the following :

7½×2=15

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



( 2 )

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 : 7½×2=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 : 7½×2=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 : 7½×2=15  
(i) Selectable marker genes  
(ii) Agrobacterium-mediated gene transfer

( 3 )

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

Or

- (b) Write short notes on the following : 7½×2=15  
(i) Biosafety concerns  
(ii) Moondust carnations

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