

B.Sc. - III CBCS Pattern Semester-V  
**011B - (DSE-II) : Biotechnology-II (Plant Biotechnology)**

P. Pages : 2

Time : Three Hours



**GUG/W/23/13127**

Max. Marks : 50

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1. Explain the initiation and maintenance of callus cultures. **10**

**OR**

- a) Explain in short about plant tissue culture. **2½**
- b) Explain the role of growth hormone. **2½**
- c) What are suspension cultures. **2½**
- d) Write a short note on single cell clones. **2½**

2. Explain the protoplast isolation, culture and fusion in details. **10**

**OR**

- a) What is shoot tip culture explain in brief. **2½**
- b) Explain cybrid in short. **2½**
- c) Give a short note on production of virus free plants. **2½**
- d) Explain haploid plant generation in short. **2½**

3. Explain the methods of nuclear transformations. **10**

**OR**

- a) Explain the role of virulence genes. **2½**
- b) Write a note on physical transformation methods. **2½**
- c) Give the general features of Ti Plasmid. **2½**
- d) Give the basics of hairy root formation. **2½**

4. Explain the herbicide resistance plants with proper examples. **10**

**OR**

- a) Bt genes and their role in insect resistance. **2½**
- b) Explain virus resistance. **2½**

c) Describe fungal resistance. 2½

d) Male sterile lines. 2½

**5.** Attempt **any ten** 1 mark each.

a) Who is the father of plant tissue culture. 1

b) What are the macronutrients. 1

c) What is meant by callus? 1

d) What is organogenesis? 1

e) What is protoplast? 1

f) What is the role of PEG? 1

g) Which bacteria is used for the Ti plasmid. 1

h) What is meant by Ri? 1

i) Name any two physical transformation methods. 1

j) Which enzyme is inhibited by glyphosate? 1

k) Bt stands for? 1

l) What is nucleocapsid? 1

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