

**MOHANLAL SUKHADIA UNIVERSITY, UDAIPUR**

**B. Sc. BIOTECHNOLOGY III YEAR TDC (2016-17)**

**B. Sc. III<sup>rd</sup> Year Practicals**

**Practical – III**

**Plant Biotechnology and its commercial application**

1. Induction of adventitious shoots from appropriate explant (e.g. hypocotyl segments, leaf discs, internodes)
2. Induction of axillary shoots from appropriate explant (e.g. nodal segments)
3. Induction of somatic embryogenesis in carrot and study of various stages.
4. Induction of callus from the appropriate explants
5. *In vitro* organogenesis from callus cultures.
6. Rooting of *in vitro* shoots by different methods:
  - (a) *In vitro* rooting
  - (b) *Ex vitro* rooting
7. Hardening and acclimatization procedures for *in vitro* produced plantlets.
8. Study of growth of tissue culture plants under CO<sub>2</sub> enriched environment.
9. Meristem tip culture for elimination of virus from infected plants (Material- Bougainvillea)
10. Culture of anthers for production of androgenic haploids (Material- *Datura*)
11. Extraction of fats from the given sample using Soxhlet's method.
12. Use of Thin Layer Chromatography for separation of alkaloids (e.g. *Catharanthus*, *Orchrosia*).
13. Use of Thin Layer Chromatography for separation of food coloring agents and additive (e.g. Turmeric).
14. Alkaloid extraction using soxhlet apparatus.
15. Immobilization of plant cells by alginate gel entrapment.
16. Study of various types of bioreactors (demonstration only)

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**III<sup>rd</sup> Year TDC Biotechnology**

**Practical I**

Incorporating Paper I and II

**Paper I:** Microbial Technology

**Paper II:** Principles of Recombinant DNA Technology

Duration: 5 hours

Max Marks: 75

A. Major Exercise from Paper I	15
B. Major Exercise from Paper II	15
C. Minor Exercise from Paper I	10
D. Minor Exercise from Paper II	10
Spots 5 x 3	15
Viva-voce	05
Record	05

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**III<sup>rd</sup> Year TDC Biotechnology  
Practical II**

Incorporating Paper III and IV

**Paper III:** Natural Resources and Environmental Biotechnology

**Paper IV:** Biotechnology in Human and Animal Health

Duration: 5 hours

Max Marks: 75

A. Major Exercise from Paper III	15
B. Major Exercise from Paper IV	15
C. Minor Exercise from Paper III	10
D. Minor Exercise from Paper IV	10
Spots 5 x 3	15
Viva-voce	05
Record	05

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Practical III**

Incorporating Paper V and VI

**Paper V:** Plant Biotechnology and its commercial applications

**Paper VI:** Project Work

Duration: 5 hours

Max Marks: 75

A. Major Exercise from Paper V

15

B. Minor Exercise from Paper V

10

Spots 5 x 3

15

Project Presentation/ Viva

25

Viva-voce

05

Record

05

### **Scheme of Examination**

Each theory paper in the annual examination shall have three sections i.e. A, B and C. In section A, total 10 questions will be set in the paper, selecting at least two from each unit. These questions to be answered in a word or so. All questions are compulsory. Each question carries 1 mark, total 10 marks.

In section B, there shall be total 10 questions, selecting two questions from each unit, five questions to be answered by the student selecting at least one from each unit. Answer should be given in approximately 250 words. Each question carries 07 marks, total 35 marks.

In section C, 04 descriptive type questions will be set in the examination paper from five units of the syllabus of the paper, selecting not more than one question from a unit. Each question may have two sub divisions. Students are required to answer any two questions approximately in 500 words. Each question is of 15 marks, total 30 marks.