PERIYAR UNIVERSITY
SALEM – 636 011

PERIYAR INSTITUTE OF DISTANCE EDUCATION [PRIDE]
P G DIPLOMA IN  BIOTECHNOLOGY

REGULATIONS AND SYLLABUS

[Candidates admitted from 2007-2008 onwards]
PERIYAR UNIVERSITY, SALEM –636 011

PERIYAR INSTITUTE OF DISTANCE EDUCATION [PRIDE]

P G DIPLOMA IN BIOTECHNOLOGY

REGULATIONS AND SYLLABUS

1. CONDITION FOR ADMISSION

A candidate who has passed a graduate or Post graduate degree in Science with Biotechnology / Botany / Zoology / Biology / Microbiology / Microbial Gene technology / Bioinstrumentation / Bioinformatics / Biochemistry / Chemistry / Agriculture / Marine Biology / Home Science / Farm Science / Nutrition and Dietetics / Integrated Biology / Plant Science / Animal Science / Fisheries Science / Aquaculture / Mathematics with Physics, Chemistry as Ancillary / Medical Lab Technology / B. Pharm / BSMS of this University or any of the above degree of any other University accepted by syndicates as equivalent thereto, subject to such conditions as may prescribed therefore shall be permitted to appear and qualify for the P G Diploma in Biotechnology Examination of this University after a course of study of one year.

2. DURATION OF THE COURSE

The course for the PG Diploma in Biotechnology shall consist of one year.
3. COURSE OF STUDY AND SCHEME OF EXAMINATIONS

The course of study shall comprise instruction in the following subjects according to the syllabus and books prescribed from time to time.

<table>
<thead>
<tr>
<th>PAPER No:</th>
<th>TITLE OF THE PAPER</th>
<th>Duration</th>
<th>Marks</th>
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<tbody>
<tr>
<td>1</td>
<td>Plant and Animal Biotechnology</td>
<td>3</td>
<td>100</td>
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<td>2</td>
<td>Engineering and Environmental Biotechnology</td>
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<tr>
<td>3</td>
<td>Industrial and Enzyme Biotechnology</td>
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<td>100</td>
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<td>Lab in Plants, Animals and Engineering Biotechnology</td>
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<td>50</td>
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<tr>
<td>5</td>
<td>Lab in Industrial and Enzyme Biotechnology</td>
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<td>6</td>
<td>Project / Dissertation Work</td>
<td>-</td>
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<td></td>
<td><strong>Grand Total Marks</strong></td>
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<td><strong>500</strong></td>
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4. EXAMINATIONS

Examination shall be of three hours duration for each paper. Theory examinations and the project report will be held at the end of the year. The candidates failing in any subject(s) may be permitted to reappear in subsequent examinations.

Model Question Paper Pattern: THEORY

Time: 3 Hours.                Max. Marks: 100

SECTION – A

Answer all the questions: 5 X 5 = 25 Marks

(2 questions from each unit with internal choice)

SECTION – B

Answer all the questions 5 X 1 5 = 75 Marks

(2 questions from each unit with internal choice)
Model Question Paper Pattern: PRACTICAL

Time: 6 Hours. Max. Marks: 50

Major : 15 Marks
Minor : 10 Marks
Spotters (5x4) : 15 Marks
Record : 05 Marks
Viva Voce : 05 Marks

Total 50 Marks

6. PASSING MINIMUM

The candidate shall be declared to have passed examination, if they secure not less than 50 marks in each examination.

7. CLASSIFICATION OF SUCCESSFUL CANDIDATES

Candidates who secure not less than 60% of the aggregate marks in the whole examination shall be declared to have passed the Diploma in First Class. All other candidates shall be declared to have passed in second class.
8. COMMENCEMENT OF THE REGULATIONS

The above regulation shall take effect from the 2007-2008 onwards

9. TRANSITORY PROVISIONS

As stipulated by the University from time to time

10. DISSERTATION:

No. of copies / distribution of dissertation:

The students should prepare three copies of dissertation and submit the same for the evaluation by Examiners. After evaluation one copy is to be retained in the college library and one copy is to be submitted to the University (Register) and the student can hold one copy.

Format to be followed:

The formats / certificate for dissertation to be submitted by the students are given below.
Format for the preparation of project work:

(a) Title page
(b) Bona fide certificate
(c) Acknowledgement
(d) Table of contents

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<tr>
<th>Chapter No:</th>
<th>TITLE</th>
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<td>Introduction</td>
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<td>2</td>
<td>Review of Literature</td>
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<td>Results</td>
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<td>Summary</td>
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<td>7</td>
<td>References / Bibliography</td>
<td></td>
</tr>
</tbody>
</table>
Format of the Title Page:

TITLE OF THE DISSERTATION

Dissertation submitted in part fulfillment of the requirement for the P G Diploma in Biotechnology to Periyar Institute of Distance Education (PRIDE), Periyar University, Salem-636011.

By

Student Name

Register Number

Endroll Number

Under the guidance of

_______________ with official Address

Name of the Study Centre with Code

Periyar Institute of Distance Education (PRIDE), Periyar University, Salem-636011

Year
Format of the Certificate:

CERTIFICATE

This is to certify that the dissertation entitled

……………………………………………………… Submitted

in part fulfillment of the requirement of the degree of P G DIPLOMA IN

BIOTECHNOLOGY to Periyar Institute of Distance Education (PRIDE),

Periyar University, Salem is a record of bonafide research work carried out

by……………. under my supervision and guidance and that no part of the

dissertation has been submitted for the award of any degree, any other diploma,

fellowship or other similar titles or prizes and that the work has not been

published in part of full in any scientific or popular journals or magazines.

Signature of the Candidate

Signature of the Guide

Study centre - Coordinator

Director

Examiner 1 :

Examiner 2 :
PAPER 1 – PLANT AND ANIMAL BIOTECHNOLOGY


UNIT _- III. Agrobacterium mediated and physical methods ( Microporation and electroporation) Applications of transgenic plants. Edible Vaccines from plants – Banana, Watermelon. Biotechnology and Intellectual property rights. Patents, trade secrets, copyright, trademark, choice of Intellectual property (IPr) and plant genetic resource (PG r) , GAA TRIPS.

UNIT – IV . Scope of Animal Tissue Culture. Culture Media. Simulating natural conditions for growth of animal cells: 1. Natural media –Plasma Clot, biological fluids tissue extract, Importance of Serum in media. 2. Chemical defined media. a) Primary
Culture – Cell lines, and cloning disaggregation of tissue, isolation of tissue, enzyme. disaggregation, and mechanical disaggregation.

b) Secondary Culture – transformed animal cells and continuous cell lines.

UNIT - V. Production of Vaccines in animal cells. Production and applications of monoclonal antibodies. Growth factors – Prompting proliferation of animal cells EGF, FGF, PDGF, IL-1, IL-2, and NGF. Transgenic animals: mice and sheep.

SUGGESTED READINGS


   Jones and Barlett Publishers, Boston.


**PAPER 2 - ENGINEERING AND ENVIRONMENTAL BIOTECHNOLOGY**


SUGGESTED READINGS


UNIT – III. Production of Microbial products - Brief account of the following products obtained by industrial microbiological fermentation – Alcohol -Alcoholic Beverage – Beer - Organic acid – Citric acid - Antibiotic – Penicillin Amino acids – Glutamic acid - Vitamin – B12. Brief account of Steroid biotransformation.


SUGGESTED READINGS

PAPER – 4 : LAB IN PLANT, ANIMAL AND ENGINEERING BIOTECHNOLOGY

1. Preparation of plant culture media – MS (1962) and White’s medium
2. Plant Protoplast Isolation
3. Micro-propagation
4. Anther Culture
5. Egg inoculation
6. Cell counting and cell viability
7. Isolation of genomic DNA from plant and animal tissue
8. Restriction & digestion of DNA
9. Separation of DNA by Gel Electrophoresis
10. SDA-PAGE

PAPER 5 – LAB IN INDUSTRIAL AND ENZYME BIOTECHNOLOGY

1. Estimation of citric acid from Aspergillus culture.
2. Estimation of lactic acid and lactose
3. Immobilization of Yeast cells
4. Preparation of wine
5. Estimation of Alcohol by Specific, gravity method
6. Immobilization of Enzymes – ( Invertase can be obtained from yeast cells).
7. Assay of enzyme (Amylase) activity
8. Isolation of interacellular enzymes
9. Isolation of extracellular enzymes

PAPER - 6. PROJECT / DISSERTATION WORK