PERIYAR UNIVERSITY

SALEM – 636 011.

PERIYAR INSTITUTE OF DISTANCE EDUCATION
[PRIDE]

DIPLOMA IN RADIO IMAGE TECHNOLOGY (2Years)

SYLLABUS / REGULATIONS

[Candidates admitted from 2007-2008 onwards]
Diploma in Radio Image Technology

**Mode:** Through Distance Education and as an off–campus Programme

**Eligibility:** A Pass in the plus 2 examination Preference will be given to those who have chosen Science subjects.

**Duration:** Two Year under Non – Semesters Pattern

Medium of Introduction: English Only

**Course of Study:**

**First Year**

Paper – 01 Biomaterials

Paper – 02 Biomedical Instrumentation – I

Paper – 03 Practical - I

**Second Year**

Paper – 04 Biomedical Instrumentation - II

Paper – 05 Radiation Physics

Paper – 06 Practical - II

**Scheme of Examinations:**

<table>
<thead>
<tr>
<th></th>
<th>Duration</th>
<th>Max. Marks</th>
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<tbody>
<tr>
<td>1. Biomaterials</td>
<td>3 hrs</td>
<td>100</td>
</tr>
<tr>
<td>2. Biomedical Instrumentation – I</td>
<td>3 hrs</td>
<td>100</td>
</tr>
<tr>
<td>3. Practical - I</td>
<td>3 hrs</td>
<td>100</td>
</tr>
<tr>
<td>4. Biomedical Instrumentation -II</td>
<td>3 hrs</td>
<td>100</td>
</tr>
<tr>
<td>5. Radiation Physics</td>
<td>3 hrs</td>
<td>100</td>
</tr>
<tr>
<td>6. Practical - II</td>
<td>3 hrs</td>
<td>100</td>
</tr>
</tbody>
</table>
Classification of successful candidates, Candidates who obtain 75% of marks, and above in aggregate will be placed in First class with Distinction.

Candidates who secure not less than 60% of the aggregate will be placed in First Class. Candidates who secure between 50% and 59% in aggregate will be placed in second class. Candidates who secure less than 40% and 49% in aggregate will be placed in Third Class.

**Question Paper Pattern with out Practical**

**Time: 3 Hours**

Max. Marks: 100

Section – A: 5x8 = 40 Marks

Answer any five Questions

Each answer not to exceed 2 pages.

Section – B: 6x10: 60 Marks

Answer all Questions

Each answer not to exceed 4 pages.
PAPER – I: BIO MATERIALS

UNIT – I

Carbohydrates: Monosaccharide – definition – classification, structure, properties and biological significance Polysaccharides – Types and biological importance.

UNIT - II

Vitamins classification, occurrence, deficiency symptoms, biochemical functions of fat soluble and water soluble vitamins

UNIT - III

Basic rules of a Microbiology laboratory - Basic requirement of Microbiology laboratory – Basic Principles, operating mechanism and application of autoclave, hot air oven, laminar air flow and pH meter.

UNIT - IV

Biotechnology – definition and history Enzyme biotechnology – Enzyme production from microbes, applications – Enzyme immobilization.

UNIT - V

NMR Spectroscopy: Principle – Theory and Experiment, MR parameters, Nuclear over Hauser effect NMR application in chemistry, Bio chemistry and Bio physics – NMR in medicine molecular modeling optimizing the model.

Books of Study:


5. Prakash. M and Arora C.K. Laboratory instrumentation Anmol Publication Pvt, Ltd.

UNIT – I

TRANSUCERS:

UNIT – II

BIOELECTRIC POTENTIALS
Sources of bioelectric potentials- Resting and acting potentials – Propagation of action potentials – Bioelectric potentials

UNIT – III

ELECTRODES:

UNIT – IV

CARDIOVASCULAR MEASUREMENTS:

UNIT – V

BIO SENSORS:

References:
1. Biomedical Instrumentation Dr. M. Arumugam
Paper – III: Practical – I

1. Blood Grouping
2. Blood Pressure Measurement
3. Blood Analysis: Sugar, Urea, Uric acid, Creatinine, Protein, Cholesterol
4. Estimation of Hemoglobin in Blood
5. Determination RBC, WBC, ESR, PCV
6. Urinary Calculai Analysis
7. LILID PROFILE
UNIT – I
RESPIRATORY SYSTEM:

UNIT - II
ULTRASONIC IMAGING:

UNIT – III
SCANNERS:
Biomedical application – Computer analysis of the Electrocardiogram – Computerized axial tomography (CAT) scanners.

UNIT – IV
MAGNETIC IMAGING:

UNIT – V
Electrophoreoses:
Basic Principles and their application - Agarose gel electrophoreoses – SDS PAGE – Blotting – southern and western – Auto radiography

Books for study:
UNIT – I


UNIT – II


UNIT - III


UNIT - IV

Diagnostic imaging and application to Radiation therapy – Radio isotopes used for Brach therapy – Digital Radiography – Digital X-ray detectors, digital subtraction angiography

UNIT – V

Books for Study.


Books for Reference:


Paper – VI: Practical – II

1. Urine Analysis: Sugar, albumin, Globulin
2. X-ray Measurement
3. Measurement of ECG
4. Measurement of EEG
5. MRI Image Analysis
6. Sequence analysis using Bioinformatics software