NILAMBER PITAMBER UNIVERSITY, MEDININAGAR

SYLLABUS
(PART – I)

THEORY

(1A.) BIOCHEMISTRY & CELL BIOLOGY **(50 MARKS)**

(a) Introduction and scope of Biochemistry.

(b) Elementary Knowledge of analytical Biochemistry, Principles, functions and uses of – Balances, Centrifuge Machines, Colorimeter, Photoelectric Calorimeters, Flame Photometer, Spectrophotometer, electrophoresis, Chromatography, Auto analyzer, Blood Gas Analyzer, Elisa readers.

(c) Elementary Knowledge of physiochemical concepts of some simple phenomenon-Osmosis, Osmotic Pressure, Dialysis, Adsorption and Viscosity, Donnan equilibrium, Surface Tension, pH, Buffers, Acid Base Balance.

(d) Chemistry of Carbohydrates, Proteins, Fats, and Nucleic Acid

(e) Nutritional aspect of Carbohydrates, Proteins, Fats, and Vitamins, Balanced diet.

(f) Importance of some minerals in relation to human body-Na, K, Ca, P, Fe, Cu, CL.

Cell biology:-

(a) Cell as basic unit of living systems. The cell theory

(b) Pre cellular evolution: artificial creation of "cells"

(c) Broad classification of cell types: PPLOs, bacteria, eukaryotic microbes, and plant and animal cells.

(d) Biochemical composition of cells (proteins, lipids, carbohydrates, nucleic, acids, and metabolic pool)

(e) Ultra structure of cell membrane

(f) Structure and function of cell organelles-Golgi bodies, cytosol, endoplasmic reticulum (rough and smooth), ribosome's, cytoskeleton structure (actin, microtubules), mitochondria, chloroplasts, lysosomos, peroxysomes, nucleus.

(g) Cell division and cell cycle

(h) Cell-interaction

(i) Cell locomotion (amoeboid, flagellar, Ciliary), muscle and nerve cells.

Cell senescence and death.

(2A.) COMPUTER & MATH **(50 MARKS)**

An Introduction to Computers

a. Characteristics, development, applications, functions and anatomy of computer.
b. Input and output devices, concept of memory
c. Communication technology, introduction to Internet.

MS-Windows

a. Basic operations, terminologies and components of windows.
b. Windows accessories.

MS-Word

a. Advanced features of ms Words-header and footer in documents, spell checks, find and replace, bullet and numbering, tables, insert pictures, mail-merge.
b. Introduction advantage of word processing crating a document, opening an existing document, saving a document, printing a document, editing and formatting a document.

MS-Excel

a. Introduction, uses and advantage of excel, entering data opening, saving and closing workbook.
b. Formatting data (alignment, font, border's and shading).
c. Functions and formulae, cell referencing.
d. Table formatting.
e. Creating charts and graphs.
f. Inserting pictures.

MS-PowerPoint

a. Introduction, features of power point.
b. Creating Presentation (auto content wizard, Design template, Blank presentation).
c. The different view of power point.
d. Add text to a placeholder, working with bullets and numbering, slide color scheme Background color.
e. Adding graphics, organization chart to presentation.
f. Working with word art, 3-D and shadow.
g. Animation effects slide transition, Action buttons, adding sound and video.

MS-DOS

a. An introduction of Dos, Concept of Directories, Some important commands of Dos.

MATHS

a. The set theory
b. Linear and geometric functions
c. Limits of functions derivatives of function
d. Binomial theorem
e. Logarithm
f. Differentiation
g. Integration
h. Probability calculations
i. Methods of sampling, confidence level
j. Measurement of central tendencies
k. Measurement of deviations

(3A.) ANATOMY & PHYSIOLOGY (50 MARKS)

(Anatomy)

• Introduction to anatomical terms.

• Cardiovascular system.

a. Heart-its position, structure, conduction system.
b. Blood vessels-position of chief blood vessels.
c. Blood circulation- systematic, portal system.
d. Respiratory system – organization and structure.

• Skeletal System

•Axial skeleton

•Appendicular skeleton

• Muscles – position of chief muscles of body and their function.

• Organization and structure of the digestive organs.

•Excretory Digestive system – organization and structure of excretory organs.

• Endocrine system – structure of endocrine glands, pituitary, pancreas, thyroid, parathyroid thymus and adrenal glands.

• Nervous system – Organization & Structure of Nervous System.

•Reproductive system – Structure of male & female reproductive system.

(Physiology)

• Organization of body – Cells & tissues.
• Digestive system – Functional Anatomy process of digestion & Absorption.
• Respiratory System – Functional Anatomy, Physiology of respiration rate.
•Cardiovascular system – Functional anatomy, Cardiac cycle, ECG.

a. Blood circulation: systemic, pulmonary, portal system.
b. Blood pressure & pulse – Definition, measurement.
c. Technique normal, low & high pressure, factors.
d. Controlling blood pressure.

•Excretory system – Function anatomy and function.

a. Fluid, electrolyte balance, structure and function of skin.

• Endocrine system: function of pituitary, pancreas, and thyroid, parathyroid.

a. Thymus and adrenal glands.

• Reproductive: male and female – functional anatomy and function.
• Special Sense Organ: functional anatomy, physiology of hearing and Equilibrium.

(4A.) MLT **(50 MARKS)**

• Introduction:

• What is Pathology and MLT?

a. Components of a Pathological Laboratory.

b. Microscope: Types, its parts and function and maintenance.

• Specimen Collection:

a. Phlebotomy and Collection of other types of samples.

b. Anticoagulants.

NILAMBER PITAMBER UNIVERSITY, MEDININAGAR

BOTANY (SUBSIDIARY/GENERAL) **(75 MARKS)**

Group-A: Microbiology

	Lectures
1. General Idea of microbiology and its scope.	04
2. General account and structure of bacteria, cyanobacteria and their economic importance.	08
3. Viruses: general account and economic importance.	06
4. General account of mycoplasma and its importance.	04
Total:	**22 Lectures**

Group-B: Cryptogams

1. Modern trends in botany and its application in various fields.	02
Structure, reproduction, diagnostic features, economic importance of:	14
Algae: Nostoc, Volvox, Oedogonium, Chara, Vaucharia, Sargassum and Batrachospermum	
Fungi: Albugo, Peziza, Puccinia, Agaricus, Alternaria	10
Lichen: General account and economic importance	02
Structure, reproduction, diagnostic features and economic importance of:	12
Bryophyta: Marchantia, Anthoceros and Sphagnum.	
Pteridophyta: Lycopodium, Selaginelia, Equisetum and Marsilea.	16
Total:	**56 Lectures**

Group-C: Phanerogams

1. General account of Gymnosperm	04
Structure, reproduction and economic importance of Pihus.	04
Taxonomy of Angiosperm:	08
Classification with special reference to the system of Bentham & Hooker and Hutchinson	
2. **Diagnostic features and economic importance of the following families:**	10
Ranuhcululaceae, Euphorbiaceae, Cucurbitaceae, Catharanthaceae, Acanthaceae, Lamilaceae, Amaranthaceae, Cyperaceae, Commelinaceae, Orchidaceae.	
3. **Anatomy:** Meristem, cambium, anomalous secondary growth in Boerhaavia, Tinospora and Dracaena.	06
Embryology: Microsporogenesis, Megasporogenesis, male and female gametophyte, fertilization, emdosperm, embryo	08
Experimental embryology and about plant tissue culture.	04
Total:	**44 Lectures**

NILAMBER PITAMBER UNIVERSITY, MEDININAGAR

ZOOLOGY (SUBSIDIARY/GENERAL) **(75 MARKS)**

Group-A: Nonchordates

Lectures

1. Bionomics, general character and classification (up to orders) of the following phyla: 18
Protozoa, Porifera, Coelenterata, Platyhelminthes, Nematodes, Annelida, Arthropoda, Mollusca and Echinodermata.

2.Detailed of the structure and life-history of the following. 24

Types:

(a) Protozoa- Paramicium
(b) Porifera- Sycon
(c) Coelenterata- Obelia
(d) Platyhelmithes- Fasciola
(e) Nematodes- Ascaris
(f) Annelida- Pheretima
(g) Arthopoda- palaemon
(h) Mollusca- pila
(i) Echinodermata- Asterias

Group-B

Cell biology, Genetics,Evolution and economic zoology

(a) Cell biology and genetics 15

Gametogenesis, Fertilisation and parthenogenesis

(b) Structure and function of DNA

(c) Gene mutation

(d) Linkage and crossing over

(a)

1. Evolution 18
Source of hereditary variations and their role of evolution
2. Darwin's theory of natural selection and neo- Darwinism.
3. Isolating mechanisms and their role in evolution

1. Economic zoology 10

(a) Lac culture

(b) Common pest of paddy and wheat and their control

(c) Vectors of malaria and Filaria.

आधुनिक भारतीय हिन्दी भाषा (M.I.L-N.H)
(अहिन्दी भाषी छात्र–छात्राओं के लिए)

यह पत्र बी.ए./बी. एससी./बी. कॉम, खण्ड–1 में प्रतिष्ठा एवं सामान्य (ऑनर्स एवं जेनरल) को सभी अहिन्दी भाषी विधार्थियों के लिए अनिवार्य है। पत्र की अवधि डेढ़ घंटे होगी। पत्र का पूर्णांक 50 और न्यूनतम उत्तीर्णांक 15 होगा।
पत्र में निर्धारित पाठय पुस्तक से एक विषयनिष्ठ आलोचनात्मक प्रश्न और पाँच वस्तुनिष्ठ प्रश्न होंगे। पत्र में प्रशासनिक पत्रचार पर केन्द्रित दो प्रश्न होगे, जिनमें आवेदन, आदेश ज्ञापन, परिपत्र का अभ्यास होगा। अंतिम प्रश्न वस्तुनिष्ठ व्याकरण का होगे, जिसमें लिंग, वचन, संधि और समास पर केन्द्रित पाँच–पाँच अंको के कुल दो वस्तुनिष्ठ प्रश्न होंगे।

अंक विभाजन –

आलोचनात्मक प्रश्न	20 x 1 = 20
वस्तुनिष्ठ प्रश्न	5 x 2 = 10
प्रशासनिक पत्रचार	5 x 2 = 10
वस्तुनिष्ठ व्याकरण	5 x 2 = 10
	50 अंक

पाठ्य पुस्तक :
पंचवटी (खंडकाव्य) : मैथिलीशरण गुप्ता
सहायक पुस्तकें :
1. व्याकरण भास्कर : डॉ वचनदेव कुमार
2. व्यावहारिक हिन्दी व्याकरण : हरदेव बाहरी

ALTERNATIVE ENGLISH

(Non-detailed study of the following)

Lectures

1. The Guide by R. K. Narayan

   Or

2. Animal Farm by George Orwell — 20
3. The Winged Word-David Green (ed)

   The following pieces are prescribed. — 16

   sonnet no 60-shakespeare. A Hymn to God the Father-Donne Retreat-Vaughan, Ode on Solitude-pope Bright star-Keats, Break, Break-Tennyson, After Death-Christina Rossetti, Preludes I & II-T.S. Eliot 8 poems)
4. One Short essay on a topic of general interest — 14

Total: 50 Lectures

Distribution of marks:

a. One question from The Guide of Animal farm (15 marks)
   (one of two questions to be set from each novel)
b. One question of critical appreciation from The Winged Word (15 marks)
   (out of three to be set)
c. One short essay out of 5 to set. (20 marks)

(PART-I)

PRACTICAL

1B. BIOCHEMICAL TECHNIQUE (50 MARKS = 25+25)

- Glassware and equipments used in Laboratory – their function and maintenance.
- Sterilization.
- Safety measures in a Laboratory.
- Conduct of a medical Lab Technicians.

2B. COMPUTER (50 MARKS = 25 + 25)

An Introduction to Computers:

d. Characteristics, development, applications, functions and anatomy of computer.

e. Input and output devices, concept of memory

f. Communication technology, introduction to Internet.

MS-Windows:

c. Basic operations, terminologies and components of windows.

d. Windows accessories.

MS-Word:

c. Advanced features of ms Words-header and footer in documents, spell checks, find and replace, bullet and numbering , tables,insert pictures, mail-merge.

d. Introduction advantage of word processing crating a document, opening an existirg document, saving a document, printing a document, editing and formatting a document.

MS-Excel:

g. Introduction, uses and advantage of excel, entering data opening, saving and closing workbook.

h. Formatting data (alignment, font, border's and shading).

i. Functions and formulae, cell reffencing.

j. Table formatting .

k. Creating charts and graphs.

l. Inserting pictures.

MS-PowerPoint:

h. Introduction, features of power point.

i. Creating Presentation (auto content wizard, Design template, Blank presentation).

j. The different view of power point.

k. Add text to a placeholder, working with bullets and numbering, slide coiour schemg Background colour.

l. Adding graphics, organization chart to presentation.

m. Working with word art, 3-D and shadow.

n. Animation effects slide transition, Action buttons, adding sound and video.

MS-DOS:

b. An introduction of Dos, Concept of Directories, Some important commands of Dos.

3B. MLT-I (50 MARKS = 25 + 25)

• Specimen Collection:

a. Phlebotomy and Collection of other type of samples.

b. Anticoagulants

4B. MLT – II (50 MARKS = 25 + 25)

• Conduct of Medical Lab Technicians.

• Microscopy.

B. SC. BOTANY PART – I (SUBSIDIARY) PRACTICAL **(FULL MARKS = 25)**

1. Morphology and structural details of cryptogams prescribed in the syllabus: Temporary stained preparations to be made for study. (Four alternate material given in the exam.)

   4*2 = 8

2. Family description of the plants belonging to the families prescribed in the syllabus (alternate family to be given in the exam.)

   2

3. Anatomical preparations (alternate materials to be given in the exam).
4. Comments on the spots.(I to iv) 4
5. Class record, field report Herbarium etc. and viva voce. 5

NILAMBER PITAMBER UNIVERSITY, MEDININAGAR

B.SC. ZOOLOGY PART – I (SUBSIDIARY) PRACTICAL **(FULL MARKS: 25)**

Lectures

Dissection (6 marks) 22

(a) Pheretima: Alimentary canal, Reproductive and Nervous system

(b) Palaemon: Alimentary and nervous system

(c) Pilia: Orans of pallial complex,

Alimentary complex and nervous system

Mounting : Temporary stained preparation (4 marks) 8

Septal nephiridia, ovary and setae of earthworm, statocyst of prawn, radula and osphradium of pila.

Spotting (8 marks) 10

(a) 4 slides from non chordates

(b) Museum specimens

Practical record and field work (4 marks)

(On Job Training I)

The student should be assigned to assist a patholab. Prior arrangement must be made of the mode of interaction of the educational Institution with different Patholabs.

SYLLABUS
(PART – II)

THEORY

5A. CLINICAL HAEMATOLOGY & CLINICAL PATHOLOGY (50 MARKS)

Clinical Haematology

- Blood: Components of Blood, Stages of development, Factors influencing development and Normal values.
- Hemoglobin: Normal values, Chemical structure and Synthesis.
- Anaemia: Classification and Investigation of a case of Anaemia, RBC Indices.
- Bleeding Disorders: Causes and Investigation.
- Applied Physiology of blood.
- Blood Groups.

Clinical Pathology

- Physical examination: volume, color, odor, appearance, specific gravity and PH.
- Examination of Stool samples:
- Examination of Semen Samlies
- Examination of Cerebrospinal Fluid (CSF).
- Examination of Body Fluids (pleural, pericardial and peritoneal)
- Microscopic examination.
- Examination of Synovial Fluid.

6A. MICROBIOLOGY **(50 MARKS)**

- Introduction and history of Microbiology.
- Microscopy.
- Staining.
- Morphology of Bacteria.
- Growth and Nutrition of Bacteria.
- Sterilization and Disinfection.
- Cultivation of Micro-organisms.
- Culture medium.
- Inoculation techniques.
- Classification of micro-organism.
- Bacterial identification.
- Infection.
- Antibiotic Sensitivity Test.

7A. CLINICAL BIOCHEMISTRY (50 MARKS)

Paper1

• Collection of specimen and detailed techniques.

• Blood Sugar, its determination and Tolerance test.

• Renal Function Test:

• Blood Urea and Blood NPN

a. Serum Creatinine.
b. Creatinine clearance test.
c. Other clearance tests.
d. Serum Uric Acid

• Plasma Protein.

• Lipid Profile.

a. Serum Cholesterol.
b. Serum Triglyceride.
c. HDL Cholesterol.
d. LDL Cholesterol.
e. VLDL Cholestrol.

Paper 2

• Calcium.

• Inorganic Phosphorus.

• Acid Phosphatase.

• Serum Sodium and Potassium.

• Liver Function Test.

a. Serum Bilirubin [Direct and Indirect]
b. SGOT,SGPT, Alkaline Phosphatase.

Enzymes.

• Cardiac Enzymes.

a. CPK
b. CKMB
c. LDH
d. Troponine

• Alpha Amylase

a. Other Enzymes
b. Hormones

• T3, T4, TSH (Thyroid Hormones)

• LH, FSH

• Prolaction

8A. BLOOD BANKING **(50 MARKS)**

- Antigen Antibody reaction
- Blood Groups- ABO and RH
- Other Blood Groups
- Ant globulin Test
- Selection of Donor
    a. Criteria for blood donation
    b. Detail Procedure
    c. Precautions
- Compatibility testing
- Processing and storage of blood
- Antibody screening and indemnification
- Blood Transfusion

BOTANY (SUBSIDIARY/GENERAL) **(75 MARKS)**

Group-A: Plant Physiology & Biochemistry **Lectures**

1. Physiology of water. 04
2. Enzyme: Nature, Mode of action, Factors affecting enzyme activity. 04
3. Photosynthesis: Mechanism and Factors. 05
4. Respiration: Mechanism and electron transport System. 05
5. Physiology of flowering: Photoperiodism and vernalization. 05

Group-B: Growth , Development & Biotechnology

1. Phytohormone, auxins, cytokinins and Gibberrellins and their role. 05
2. Growth and Development: Kinetics of growth, Dormancy, Seed germination, Plant movements. 06
3. Genetic engineering: Tools and technique of recombinant DNA technology, dlonrhg vectors, technique of gene mapping and chromosome walking. 08
4. Biotechnology: Functional definition, basic aspect of plant tissue culture, cellular totipotency, differentiation and morphogenesis, biology of agrobacterium, vectors for gene delivery and marker genes, salient achievement in crop biotechnology. 08

Group-C: Cytogenetics & Molecular Biology

1. Structure of cell, Cell organelles: Mitochondria, Chloroplast and Centrosome. 05
2. Mitosis and Meiosis. 05
3. Mendelism. 04
4. Structure and Organization of Chromosome. 04
5. Mutation. 04
6. Polyploidy. 03

Group- D: Environmental Biology

1. Introduction of ecology and its scope. 04
2. Ecological factors. 06
3. Plant communities and Ecosystem. 08
4. Succession-: Hydrosere and Xerosere. 06
5. Pollution: water, Soil, Air and Sound. 04

Group- E: Economic botany

1. Forest wealth of Jharkhand and with special reference to timber and medicine yielding plants. 09
2. Agricultural and Horticultural plants with special reference to pulses and oil seeds. 08

Total: **120 Lectures**

ZOOLOGY (SUBSIDIARY/GENERAL) **(75 MARKS)**

Group-A: 6 hordata

1. **Bionomics, general character and classification** **14**

(up to orders) of living chordates of the following groups:

Protochordates, Cyclostomes, Pisces, Amphibia, Reptillia, Aves and Mammals.

2. **Study of the following types:** **40**

(a) Hemichordata : Balanoglossus

(b)Urochord :Herdmania (including retrogressive metamorphosis))

(c) Cephalochordata : Amphoxus

(d) Fishes : Scoliodon, Pisciculture

(e) Reptiles : Biting and feeding mechanism of snakes

(f) Aves : Coiumba, Flight adaption

(g) Mammals : Characters, distribution and affinitives of prototheria and metatheria.

3. Comparative study of the following organs , brain and aortic arches

Group-B: Embryology, Biochemistry, Physiology and endocrinology

1. Embryology

(a) Types of vertebrate eggs and their early cleavage.

(b) Development of Amphioxus (up to the formation of coelom) and chick (up to 3 germinal layers)

(c) Placenta in mammals, its development, types and functions.

2. Biochemistry, Physiology and Endocrinology **24**

(a) Structure and classification of proteins, carbohydrates and fats.

(b) Physiology of digestion, excretion and respiration in mammals.

(c) Histopathology of the following endocrine glands:

Pituatary, thyroid, adrenal, testis, ovary, and islets of langerhans.

आधुनिक भारतीय भाषा अहिन्दी (M.I.L-N.H)
(अहिन्दी भाषी छात्र–छात्राओं के लिए)

यह पत्र बी.ए./बी. एससी./बी. कॉम, खण्ड–2 में प्रतिष्ठा एवं सामान्य (ऑनर्स एवं जेनरल) को सभी अहिन्दी भाषी विघार्थ्यिों के लिए अनिवार्य है। पत्र की अवधि डेढ़ घंटे होगी। पत्र का पूर्णांक 50 और न्यूनतम उत्तीर्णांक 15 होगा।

पत्र में निर्धारित पाठय पुस्तक से एक विषयनिष्ठ आलोचनात्मक प्रश्न और दस वस्तुनिष्ठ प्रश्न होंगे। पत्र में प्रशासनिक पदनाम शब्दावली के अंग्रेजी सं हिंन्दी से अंग्रेजी अनुवाद एवं संक्षेपण पर केन्द्रित होंगे।

अंक विभाजन

आलोचनात्मक प्रश्न	20 x 1 = 20
वंस्तुनिष्ठ प्रश्न	1 x 10 = 10
प्रशासनिक शब्दावली अनुवाद	5 x 2 = 10
संक्षेपन	1 x 10 = 10
	50 अंक

पाठ्य पुस्तक

पाँच फूल : प्रेमचन्द

अनुशंसित पुस्तकें :

1. व्याकरण भाष्कर : डॉ0 वचनदेव कुमार
2. आधुनिक हिन्दी व्याकरण और रचना : डॉ0 वासुदेव नन्दन प्रसाद

ALTERNATIVE ENGLISH

(Non-detailed study of the following)

Selected Short Stories cd. D. Thakur — 25 Lectures

The following poems are prescribed:

1. Mr. Know. I
2. The dream
3. The Castaway
4. The Tiger's Claw

1. Expansion of an idea — 10 Lectures
2. Meaning of an unseen poem — 14 Lectures

Distribution of marks - Full Marks 50

1. One question (with an alternative) from the prescribed anthology (25 marks)
2. Expansion of idea (out of three to be set) (10 marks)
3. Meaning of an unseen poem. (15 marks)

(PART-II)

PRACTICAL

5B. CLINICAL HEMATOLOGY (50 Marks = 25 + 25)

- Collection of Blood Samples
- Hemoglobin Estimation
- Blood cell Counts [RBC, WBC, Platelets]
- ESR
- Blood Film Examination
- Bone Marrow Examination
- Reticulocyte Count
- Red Cell Fragility Test
- Test for Sickling
- Tests for Bleeding disorders – BT, CT

6B. PRACTICAL OF CLINICAL BIOCHEMISTRY {50 MRAKS} (25+25)

- Determination of Blood sugar
- Determination of Blood Urea
- Determination of Blood NPN
- Determination of serum Creatinine
- Determination of serum Uric Acid
- Determination of Plasma Protein
- Determination of serum Cholesterol
- Determination of serum Triglyceride
- Determination of HDL Cholesterol
- Determination of LDL Cholesterol
- Determination of VLDL Cholesterol
- Determination of Inorganic Phosphorus
- Determination of Calcium
- Determination of Acid Phosphatase
- Determination of Serum Sodium and Potassium
- Determination of Serum Bilirubin [Direct and Indirect]
- Determination of SGOT
- Determination of SGPT
- Determination of Alkaline Phosphatase

7B. PRACTICAL OF MICROBIOLOGY [50 MARKS] (25+25)

- Sterilization and Disinfections
- Microscopy
- Staining
- Inoculation techniques
- Antibiotic Sensitivity Test

8B. CLINICAL PATHOLOGY [50 MARKS] (25+25)

Examination of Urine samples:

a. Physical examination: volume, Color, odor, appearance, specific gravity and PH.
b. Chemical examination:
c. Protein:- Heat and acetic acid test
d. Sulfosalicylic acid method
e. Reducing Sugar – Benedict test
f. Ketone bodies – Rothera test
g. Bile Pigment – Fouchet method
h. Bile salt – Hays test
i. Blood – Benzidine test
j. Urobilinogen & Porphobiliongen – Ehrlich aldehyde and Schwartz test
k. Bence jones Protein

Examination of stool samples:

a. Physical examination
b. Chemical examination
c. Occult blood
d. Reducing sugar
e. Microscopic examination for ova, cysts, crystals and fat globules

Examination of semen samples

a. Physical examination
b. Chemical examination
c. Microscopic examination

Examination of Cerebrospinal Fluid (CSF)

a. Physical examination
b. Chemical examination
c. Microscopic examination

Examination of Body Fluids (pleural, pericardial and peritoneal)

a. Physical examination
b. Chemical examination
c. Microscopic examination

Examination of Synovial Fluid

a. Physical examination
b. Chemical examination
c. Microscopic examination

NILAMBER PITAMBER UNIVERSITY, MEDININAGAR

B. SC. BOTANY PART – II (SUBSIDIARY) PRACTICAL **(FULL MARKS = 25)**

1. Perform experiments in the plant physiology (By lottery): 5
   (a) Rate of imbibition of starchy and oily seeds.
   (b) Rate of transpiration by Farmer's/Ganong's photometer
   (c) Determination of DPD by plasmolytic method
2. Gram staining of bacteria. 2
3. Mitotic studies of roots. 3
4. Ecological anatomy. 3
5. Comments upon the spots (1 to 5). 5
6. Viva-voce, class record, field study & exclusion. 7

NILAMBER PITAMBER UNIVERSITY, MEDININAGAR

B.SC. ZOOLOGY PART – II (SUBSIDIARY) PRACTICAL **(FULL MARKS: 25)**

No. of lectures: 50

1. **Dissection: (6 marks)** 18
   a. Scoliodon: afferent and efferent branchial arteries, cranial nerves Vth, With, IXth, and Xth, eye muscles and their nerve supply urinogenital system.
   b. Columba: flight muscles, arterial and vonous system. 6

2. **Mounting:**
   Temporary stained preparation (4 marks)(8) Scales of fishes, pecten and filoplume of birds, ampulla of Lorenrini.

3. **Spotting:** ($8^{1}1$ marks)
   a. 3 slides from histology embryology and endocrinology.
   b. 2 museum specimens.
   c. 3 bones

4. **Practical record and field work** (4 marks)
5. **Viva** (3 marks)

(On Job Training II)

This should be taken up during summer over a period of 1 month in any Path lab.

SYLLABUS
(PART – III)

THEORY

9A. SYSTEMIC BACTERIOLOGY & PARASITOLOGY [50 MARKS]

• Gram-Positive Cocci:

a. Staph aurus
b. Str Pyogenes
c. Str Penumoniae

• Gram- Positive Rods:

- Aerobic

  Corynebacterium Diphtheriae

  Mycobacterium Tuberculosis

  Mycobacterium Leprae

  Atypical Mycrobacteria

- Gram Negative Rods:

  a. Enterobacteriaceae
  b. Salmonella Typhi
  c. Shigella

• Vibrio Cholerae

• Pseudomona Aeruinosa

• Haemophilus Infuenza

• Spirochaetes – Treponema Pallidum

Parasitology

• Protozoology:

a. Entamoeba Histolytica
b. Trichomonas Vaginalis, Leishmania Donovani Giardia Lamblia
c. Plazmodium

• Helminthology:

a. Echinococcus Granulosus

• Nemathelminthes

a. Trichuris Trichiura
b. Ancylostoma Duodenale
c. Ascaris Lumbricoides

d. Enterobius Vermicularis
e. Wuchereria Bancerofti
f. Dracunculus Medinensis
- General Virology
- Specific Virus
- AIDS Virus
- SARS Virus

10A. IMMUNOLOGY **[50 MARKS]**

- Essence of Immunology
- Branches of Immunology
- History of Immunology
- Immune system attacks & protect against
- Component of immune system
  a. Sub system of immune system
  b. Adaptive Immune system
  c. Organs of Immune system
  d. Tissues of Immune system
  e. Cells of Immune system
  f. Immunological biomolecules
- Immune System disorder
- Immune system and health maintenance
  g. Optimum Immune system
  h. Exercise of Immune system
  i. Nutrition & Immune system
  j. Immunological medicine
  k. Immunological treatment
- Immunologist

Histopathology

- Preservative of specimen
- Section taking
- Block making
- Section cutting
- Fixing
- Staining

(PART-III)

PRACTICAL

9B. SEROLOGY & IMMUNOLOGY [50 MARKS] (25+25)

- WIDAL Test
- VDRL Test, Conventional
- C-Reacting Protiens
- Anti- Streptomycin
- Rheumatoid Factor
- Hepatitis C

10B. HISTOPATHOLOGY [50 MARKS] (25+25)

- Preservative of specimen
- Section taking
- Block making
- Section cutting
- Fixing
- Staining

11. On the job training (Part I & II) Project Report (Part III) [100 marks] (50 + 50)

Subsidiary Papers (Optional) Part I+ Part II	**Maximum marks**
1. Botany (Theory & Practical)	200
2. Zoology (Theory & Practical)	200
3. Chemistry (Theory & Practical)	200

Compulsory Papers Part I & Part II	**Maximum Marks**
1. English language & literature (NH+MB) (Part I &II)	50+50

Compulsory Paper Part III	**Maximum marks**
1. Environmental studies &Ethics	100

Thank You