

1) **Introduction of Bones of the Human Body of :**

- Upper Limb : clavicle, scapula, humerus, radius, ulna, carpal, metacarpal & phalanges
- Lower Limb : hipbone, femur, tibia, fibula, tarsus, metatarsus & phalanges
- Skull : name the bone of skull and sutures between them
- Thorax : ribs, and their articulations
- Vertebral Column : cervical, thoracic, lumbar, sacral and coccygeal vertebrae

2) **Surface Markings of the Whole Body :**

- Nine regions of the abdomen
- Hip
- Skull

3) **Introduction of different Vital Organs :-**

A) **Respiratory Organs :**

- Nasopharynx
- Oropharynx
- Larynx
- Trachea
- Bronchi
- Lungs (and their lobular segments)
- Thoracic cavity
- Pleura and Pleural cavity

B) **Circulatory Organs :**

- Anatomical position of the heart
- Pericardium of the heart
- Chambers of the heart
- Great vessels of the heart
- Valves of the heart

C) **Digestive Organs :**

- Tongue
- Teeth
- Oral cavity
- Pharynx
- Oesophagus
- Stomach
- Small intestine
- Large intestine

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D) Reproductive Organs:

- Introduction of male Genital Organs (Gonads) : Testes, Epididymis
- Introduction of female Genital Organs:- Ovary, Fallopian Tube, Uterus, Vagina

E) Liver, Gall Bladder and Spleen :

- Introduction
- Anatomical position

F) Excretory Organs:

- Cortex and Medulla of Kidney
- Ureter
- Urinary Bladder
- Urethra (male and female)

G) Muscles :

- Introduction, Origin and Insertion, Function

H) Embryology: Only Introduction

I) Endocrine Glands: Morphology and Anatomical relation

- Pituitary Gland
- Thyroid Gland
- Para Thyroid Gland
- Supra-renal glands

J) Nervous System:

- Neuron Theory
- Classification of Nervous System
- Name of Basal membrane
- Blood supply of brain
- Cranial Nerves
- Sympathetic & Parasympathetic system

K) Sense Organs:

- Skin - Histology, Epidermis and Dermis
- Eye - Morphology, Parts of eye, Histology, Visual pathway and Optic nerve
 - Lachrymal apparatus, Extra ocular muscles & it's Nerve supply
- Ear
- Nose
- Tongue

BACHELOR OF OPHTHALMIC TECHNOLOGY **1st Year**

Sub:- ANATOMY Practical (Only INTERNAL)

- 1. Labelled Diagram of different organs and bones
- 2. Surface Markings of the Body
- 3. Demonstration of Histological Slides-
a. Cartilage b. Bone c. Smooth Muscles d. Skeletal Muscles
- 4. Radiography of Normal Bones, Joints and Chest.

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BACHELOR OF OPHTHALMIC TECHNOLOGY

1st Year

Subject :- **PHYSIOLOGY THEORY (Paper-2) F.M.-70 (Hrs.-3hrs)**

1. **Cell: Biology :-** Cell membrane structure, intracellular organelles and their functions and cytoskeleton
 - Definition
 - Structure and functions the cytoplasmic Organelles
 - Reproduction : Meiosis, Mitosis
2. **The important physio-chemical laws applied to physiology**
 - Diffusion
 - Osmosis
 - Dialysis
3. **Fundamentals of different Organ System**
 - Cardiovascular System
 - Respiratory System
 - Digestive System
 - Excretory system
 - Reproductive System
 - Endocrine System
 - Lymphatic System
4. **Blood**
 - Definition
 - Composition
 - Function
5. **Formation of different type of blood Cells**
 - Erythrocytes
 - Leucocytes
 - Thrombocytes
6. **Mechanism of Blood Clotting**
7. **Cerebrospinal Fluid**
 - Formation & Circulation
 - Composition
 - Circulation and Function
8. **Special Senses**
 - Hearing
 - Taste
 - Smell
 - Sight
9. **Kidney, General introduction, structure and function**
10. **Endocrine** : Secretion, regulation and functions of pituitary, thyroid, adrenal, pancreas, parathyroid, testis & ovaries
11. **Respiratory System** : introduction , general Organization, Mechanics of respirations, pulmonary volumes and capacities, Transport of respiratory gases, Nervous and chemical, control of respiration, pulmonary function tests.
12. **Cardiovascular System** : Structure and properties of cardiac muscle, Cardiac cycle Regulation of heart rate, Cardiac output , Blood pressure, its regulation, Regional circulation, coronary , cerebral circulation , Cardio respiratory changes during exercise , Normal ECG.
13. **Physiology of Exercise** : Effects of acute and chronic exercise on Oxygen transport, B.M.R. /R.Q / Body fluids and electrolytes.

BACHELOR OF OPHTHALMIC TECHNOLOGY

1st Year

Subject :- **PHYSIOLOGY PRACTICAL (Only INTERNAL)**

Labelled diagrams of different Vital Organs & System

Labelled diagrams of Corpuscles

Blood grouping Rh Typing

Determination of Vital Capacity.

Auscultations of Heart Sound

Blood pressure Recording

Pulse Rate, Heart Rate

BMI

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BACHELOR OF OPHTHALMIC TECHNOLOGY

1st Year

Sub :- Pathology

THEORY (Paper-3)

F.M.-70 (Hrs.-3hrs)

A) General Pathology

- The Cell in health and disease
- a. Introduction of pathology
- b. Cellular structure and metabolism
- c. Inflammation - Acute and Chronic
- d. Derangement of Body Fluids and Electrolytes
 - Types of shocks
 - Ischaemia
 - Infection
- e. Neoplasia - Etiology and Pathogenesis

B). Hematology (Normal and Abnormal)

- a. Formation of Blood
- b. Erythropoiesis
- c. Leucopoiesis
- d. Thrombopoiesis
- e. Collection of Blood
- f. Anticoagulants- mechanism of coagulation
- g. Red cell count - Haemocytometer, Methods and Calculation
- h. WBC Count - Methods, RBC - Indices, Platelets
- i. Differential Leucocytes Count (DLC) -
 - Morphology of White Cells, Normal Values
 - Romanowsky Stains : Staining procedures
 - Counting Methods, Principle of staining
- j. Hb estimation - Method
 - Colorimetric Method
 - Clinical importance
- k. Normal Haemostasis - BT, CT Prothrombin Time
- l. Blood Bank - Introduction Blood Grouping and Rh Typing, Cross matching.
- m. ESR

C). Clinical Pathology

Body Fluids :

- a. Urine :
 - Method of Collection
 - Normal Constituents
 - Physical Examination
- b. Stool Examination :
 - Method of Collection
 - Normal Constituents and appearance
 - Abnormal Constituents (Ova, Cyst)
- c. CSF Examination :
 - Physical Examination
 - Chemical Examination
 - Microscopy
 - Cell Count
 - Staining

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- d. Semen analysis
 - Collection
 - Examination
 - Special Tests

D). Histopathology

- Introduction
- Techniques of - Receiving, grossing, mounting, section cutting.
- Various fixative modes of action preparation and indication.
- Decalcification of tissues.
- Tissues processing for routine paraffin section.
- Staining of Tissues - H & E staining.
- Maintenance of records and filling of the slides.
- Bio medical waste management.
- Preparation of Museum specimens.

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BACHELOR OF OPHTHALMIC TECHNOLOGY

1st Year

Sub :- Pathology

Practical (ONLY INTERNAL)

- Collection of Sample
- Hb estimation
- TLC and DLC
- RBC, WBC, Platelet Count
- Peripheral blood film - staining and study of Malarial Parasite Thick & Thin
 - a). Urine, Stool, Semen and CSF - Collection, Handling, Examinations
 - b). Absolute Eosinophil Count, PCV, RBC indices, ESR Estimation, Platelet Count
- Blood grouping Rh Factor Tube Method Slide Method
- 1. Bleeding Time, Clotting Time, PT, APTT, TT, Platelet Count & Platelet Function Test
- Histopathology Section cutting and H & E Staining

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BACHELOR OF OPHTHALMIC TECHNOLOGY

1st Year

Sub :- Microbiology THEORY (Paper---(4-a)) F.M.-35 (Hrs.-1.5hrs)

COURSE CONTENTS :

1. Introduction and brief history of Microbiology
 - Historical Aspect
 - Micro- Organism in Health and Disease
2. Requirement and uses of common Laboratory Equipments
 - Incubator, Hot Air Oven, Water Bath
 - Anaerobic Jar, Centrifuge, Autoclave
 - Microscope
 - Glassware - Description of Glassware, its use, handling and care
3. Sterilization :
 - Methods of Sterilization and it's Principle
 - Culture Media
 - Autoclave - its structure, functioning, control and indicator
4. Antiseptics & Disinfectants
 - Definition
 - Types
 - Mode of Action
 - Uses
5. Collection, Transportation and processing of clinical samples for Microbiology investigations

COURSE CONTENTS

General Bacteriology

- Definition
- Morphology, Physiology and Classification of Bacteria
- Structure of Bacterial cell, Capsule, Flagella and Spores
- Growth of Bacteria
- Nutrition of Bacteria
- Staining Techniques used for Bacteriology

Virology :

- Definition
- General Properties of Viruses
- Pathogenesis of Viral Infection
- Diseases caused by different Virus and mode of infection

Parasitology :

- Definition
- General description of Parasites and Host
- Classification of Parasite
- Mode of transmission of parasitic diseases

Fungus :

- Definition
- Structure
- Classification

BACHELOR OF OPHTHALMIC TECHNOLOGY1st Year**Sub :- Microbiology****Practical (ONLY INTERNAL)**

Demonstration of washing of instruments

Staining - Type of Staining, Principle, Procedure and Interpretation

Culture - Urine, Blood, Body, Fluid, Water Stool, Swab

Types of media

Colony Characteristics

VDRL, ASO, CRP, WIDAL

Stool Exam

Microscopic Stool Exam

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ACHELOR OF OPHTHLAMIC TECHNOLOGY1st YearSubject :- **BIOCHEMISTRY** **THEORY** (Paper---(4-b)) F.M.-35 (Hrs.-1.5hrs)**(1) PHYSICAL BIOCHEMISTRY**

1. Introduction of Biochemistry
2. Elementary knowledge of inorganic chemistry :- Atomic weight, molecular weight, equivalent weight , acid, bases.
3. Definition and preparation of solutions :- percent solution , Molar solution , Normal solution and Buffer Solution etc.
4. Definition and preparation of Reagent.
5. Unit of measurement
6. PH indicators: pH paper, universal and other indicators, pH measurement : different methods.
7. Ionization of water buffer PH value of solution using.

(2) GENERAL BIOCHEMISTRY

1. Aim and scope of Biochemistry
2. Collection and Recording of Biochemical Specimen, separation of serum/plasma preservation and disposal of Biological material.
3. Chemical examination of urine :Qualitative, Sugar, Protein, Bile Salt, Bile Pigment, Ketones Bodies
4. Chemical examination of Stool :Occult Blood.
5. Chemical examination of other Body fluids : CSF , Pleural Fluid , Ascitic Fluid etc.
6. Laboratory management and Maintenance of Records.

INTRODUCTORY KNOWLEDGE OF :-**Carbohydrates:-**

- Importance
- Classification
- Properties
- Estimation of Glucose
- Clinical Significance

Protein :-

- Introduction and Physiological importance
- Amino acids
- Essential amino acids
- Classification
- Denaturation of Proteins
- Estimation of Total protein, albumin, Globulin, A/G Ratio

Lipids :-

- Definition and Introduction of Lipids
- Functions of Lipids
- Classification
- Properties of Lipids
- Clinical significance
- Steroids
- Estimation : Total lipids, HDL, LDL, VLDL, Total cholesterol, Triglyceride

Electrolytes :

- Function
- Properties
- Estimation of Essential electrolytes: Sodium , Potassium, calcium, chloride and phosphate etc.
- Clinical Importance

Liver Function Test (LFT) :-

- Introduction
- Functions of liver
- Bile pigment
- Type of Jaundice
- Clinical significance

Kidney function tests (KFT):-

- Structure and function of Kidney
- Formation of urine
- Urea and Uric acid estimation

(3) ANALYTICAL BIO-CHEMISTRY

Estimation of specific gravity of urine,

Urinary proteins

Blood sugar

Blood urea

Serum Creatinine

Blood Cholesterol

Serum Bilirubin, SGPT, SGOT,

Alkaline Phosphatase

Australia Antigen

BACHELOR OF OPHTHALMIC TECHNOLOGY

1st Year

Subject :- BIOCHEMISTRY

PRACTICAL (ONLY INTERNAL)

Practical

Introduction and usage of Glassware and Instruments.

Glassware :

- Composition of Glass
- General glass wares

Instruments :

- Balance
- Hot plate and Magnetic stirrer
- Centrifuges
- Incubators
- Constant temperature bath
- Colorimeter : Principle Function
- Photometer
- Flame Photometry
- Urine Examination Physical, Microscopic, Biochemical
- Stool Examination
- Body Fluids : Physical and chemical examination CSF Pleural Fluid , Ascitic fluid.
- Methods of estimation of glucose : Benedicts Reaction, Glucose oxidase
- Methods of estimation of urea.
- Methods of estimation of creatinine.
- Methods of estimation of Cholesterol.
- Methods of estimation of Bilirubin.
- Methods of estimation of SGOT, SGPT

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BACHELOR OF OPHTHALMIC TECHNOLOGY

1st Year

SUBSIDIARY SUBJECT ----- COMMUNICATIVE SKILLS (ENGLISH)

THEORY F.M.-35 (Hrs.-1.5hrs)

COURSE OUTLINE

COURSE DESCRIPTION : This course is designed to help the student acquire a good command and comprehension of the English language through individual papers and conferences.

BEHAVIOURAL OBJECTIVES :

The student at the end of training is able to

1. Read and comprehend English language.
2. Speak and write grammatically correct English.
3. Appreciates the value of English literature in personal and professional life.

UNIT - I : INTRODUCTION :

Study Techniques

Organization of effective note taking and logical processes of analysis and synthesis use of the dictionary

Enlargement of vocabulary

Effective diction

UNIT - II : APPLIED GRAMMER :

Correct usage

The structure of sentences

The structure of paragraphs

Enlargement of Vocabulary

UNIT - III : WRITTEN COMPOSITION :

Pracee writing and summarizing

Writing of bibliography

Enlargement of Vocabulary

UNIT - IV : READING AND COMPREHENSION :

Review of selected materials and express on self in one's words.

Enlargement of Vocabulary

UNIT - V : THE STUDY OF THE VARIOUS FORMS OF COMPOSITION :

Paragraph, Essay, Letter, Summary Practice, in writing

UNIT - VI : VERBAL COMMUNICATION :

Discussions and summarization, Debater, Oral reports Use in teaching

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BACHELOR OF OPHTHALMIC TECHNOLOGY

1st Year

SUBSIDIARY SUBJECT - COMPUTER SKILLS

THEORY F.M.-20 (Hrs.-1.5hrs)

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PRACTICAL F.M.-15

Basic Computer Course (BCC)

1. **Knowing computer:** What is Computer, Basic Applications of Computer; Components of Computer System, Central Processing Unit (CPU), VDU, Keyboard and Mouse, Other input/output Devices, Computer Memory, Concepts of Hardware and Software; Concept of Computing, Data and Information; Applications of IECT; Connecting keyboard, mouse, monitor and printer to CPU and checking power supply.
2. **Operating Computer using GUI Based Operating System:** What is an Operating System; Basics of Popular Operating Systems; The User Interface, Using Mouse; Using right Button of the Mouse and Moving Icons on the screen, Use of Common Icons, Status Bar, Using Menu and Menu-selection, Running an Application, Viewing of File, Folders and Directories, Creating and Renaming of files and folders, Opening and closing of different Windows; Using help; Creating Short cuts, Basics of O.S Setup; Common utilities.
3. **Understanding Word Processing:** Word Processing Basics; Opening and Closing of documents; Text creation and Manipulation; Formatting of text; Table handling; Spell check, language setting and thesaurus; Printing of word document.
4. **Using Spread Sheet: Basics of Spreadsheet;** Manipulation of cells; Formulas and Functions; Editing of Spread Sheet, printing of Spread Sheet.

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BACHELOR OF OPHTHALMIC TECHNOLOGY

2nd Year

Sub:- OCULAR PHARMACY AND PHARMACOLOGY

THEORY (Paper-1)

F.M.-70

(Hrs.-3hrs)

1. OCULAR PHARMACY AND PHARMACOLOGY

1. Ocular Pharmacology - An introduction
2. Autonomic nervous system
3. Routes of drug administration
4. Miotics, Mydriatics & Cycloplegics drugs.
5. Antibacterial drugs & therapy
6. Antifungal drugs & therapy
7. Anti-Viral drugs & therapy
8. Anti-inflammatory drugs & therapy
9. Anti-glaucoma drugs & therapy
10. Ophthalmic dyes
11. Local Anesthetics
12. Ophthalmic preservatives
13. Ocular lubricants
14. Ocular irrigating solutions
15. Ocular antiseptics & disinfectants
16. Anti-cataract agents
17. Contact lens solution
18. Chelating agents
19. Immunosuppressive agents

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BACHELOR OF OPHTHALMIC TECHNOLOGY

2nd Year

Paper - I

PRACTICAL (Only INTERNAL)

OCULAR PHARMACY AND PHARMACOLOGY

1. Quality Control :
 - 1.1. Sterilization
 - 1.2. pH measurement
 - 1.3. Osmolarity
 - 1.4. Spectrophotometer for concentration
2. How to prepare following eye drops:
 - 2.1. Pilo-clonidine eye drops
 - 2.2. Artificial eye drops
 - 2.3. Glycerin eye drops
 - 2.4. Homatropine eye drops
 - 2.5. EDTA eye drops
 - 2.6. Sulphacetamide eye drops
 - 2.7. Dexamethasone eye drops
 - 2.8. Methylecellulose eye drops
 - 2.9. Saline eye drops
 - 2.10. Sodium citrate eye drops
3. MK Media preparation
4. Fluorescein Strip, Rose Bengal Strips preparation
5. Autologous serum eye drops preparation
6. Dilution of drug in different concentration
7. Steroid detection test

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BACHELOR OF OPHTHALMIC TECHNOLOGY

2nd Year

Sub:- OPTICS REFRACTION

THEORY (Paper-2-A)

F.M.-35

(Hrs.-1.5hrs)

2. A-(a) OPTICS

1. Elementary basis of light- Interference, diffraction, polarization spectrum, surface tension, viscosity
2. Principles of Refraction.
3. Physical Optics -1, Lens Shapes -Convex, Concave
4. Physical Optics -2, Thin Lens equation, thick lens equation
5. Physical Optics -3, Front and back vertex power
6. Physical Optics -4. Aberrations
7. Physical Optics -5. Spherical, Cylindrical & Toric surfaces, Aspheric surfaces
8. Prisms -definition, uses, nomenclature, apex
9. Determination of focal length & dioptric power of lens
10. Strum's Conoid
11. Neutralization of lenses
12. Foci meter
13. Centre & Axis Marking by focimeter
14. Simple & Toric transposition
15. Prismatic effect & Decentration
16. Aberrations & Tints in spectacle Lenses
17. Spectacle Lens Manufacturing -Sphericals, Toric, Bifocals, Lenticular & Lab Visit
18. Spectacle Frames -History, Nomenclature, Types & parts, sides, joints, frame bridge.
19. Shape of Spectacle Frame -Measurements & Making, Frame & Face Measurements
20. Schematic eye
21. Emmetropia & Ammetropia -Etiology, Population, Distribution, Growth of eye
22. Myopia
23. Hypermetropia
24. Astigmatism
25. Aphakia/Pseudo-phakia
26. Presbyopia
27. Keratoconus
28. Post-Op. Refractive errors
29. Refraction of irregular reflex
30. Accommodation & Convergence -1, Far point, near point, range, amplitude of accommodation
31. Accommodation & Convergence -2. Methods of measurements, NPA. AC/A ratio.
32. Retinoscopy -Principle & Methods
33. Objective Refraction
34. Subjective Refraction
35. Cross Cylinder
36. Workshop
37. Manufacturing Spectacle Lens
38. Plastic Lenses -Manufacturing & Characteristic
39. Lens Designs -Ashperic
40. High Index Lenses,

- 41. Photocromatic Lenses
- 42. Tinted Lenses
- 43. Polaroid Lenses
- 44. Bifocals
- 45. Measurement for ordering spectacle, IPD, Marking centration.V. D. Calculation.
- 46. Fitting Bifocals, Multifocals, Prism Lenses
- 47. Fitting Lenses in Frames.
- 48. Glazing & Edging
- 49. Final Checking & Adjustments to prescriptions
- 50. Patient complains, handling correction.
- 51. Repair of spectacles
- 52. Special types of spectacles monocells/ptosis hemianopic glasses
- 53. Test chart standards
- 54. Phoropter
- 55. Objective Optometer
- 56. Projection Charts
- 57. Refraction room Standards

2. (b) REFRACTION

- 1. Emmetropia & Ammetropia -Aetiology, Population, Distribution, Growth of eye.
- 2. Myopia
- 3. Hypermetropia
- 4. Astigmatism
- 5. Aphakia/Pseudo-phakia
- 6. Presbiopia
- 7. Keratoconus
- 8. Post-Op. Refractive errors
- 9. Refraction of irregular reflex
- 10. Accommodation & Convergence -1. Far point, near point, ranges. Amplitude of accommodation
- 11. Accommodation & Convergence - 2. Methods of measurements, NPA. AC/ A ratio.
- 12. Retinoscopy -Principle & Method
- 13. Objective Refraction
- 14. Subjective Refraction
- 15. Cross Cylinder



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BACHELOR OF OPHTHALMIC TECHNOLOGY

2nd Year

Sub:- OPHTHALMIC INSTRUMENTS AND APPLIANCES

THEORY (Paper-2-B)

F.M.-35

(Hrs.-1.5hrs)

2 B. OPHTHALMIC INSTRUMENTS AND APPLIANCES

1. Indirect Ophthalmoscope
2. Direct Ophthalmoscope
3. Slit Lamp: Haag-Streit.
4. Photo-slit lamp
5. Lensometer. Lens gauge
6. Tonometer
7. Fundus Camera
8. External eye photography
9. Auto-refractometer
10. Corneal Examination -1. Placido disc
11. Corneal Examination -2. Katerometer
12. Corneal Examination -3. V KG
13. Corneal Examination -4. Specular Microscopy
14. Corneal Examination -5. Aesthesiometer
15. Exophthalmometer
16. Perimeter - Manual & automated
17. Orthoptics Instruments -Haploscope/Home devices
18. Heidelberg Retino-tomography HRT -II
19. Nerve fiber analyzer
20. Frequency doubling perimeter
21. Non Contact Tonometer
22. Heidelberg Analmascope
23. Pachometers
24. Contrast sensitivity tests
25. Glare acuity tests
26. Colour vision tests
27. Dark adaptometer

BACHELOR OF OPHTHALMIC TECHNOLOGY

2nd Year

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Paper - 2-A F.M.-20 +5=25

2. A-(a) OPTICS

1. Workshop
2. Manufacturing Spectacle Lens
3. Manufacturing Bifocal Lenses
4. Measurement for ordering spectacle, IPD, Marking centration, V. D. Calculation.
5. Fitting Bifocals, Multifocals, Prism Lenses
6. Fitting Lenses in Frames
7. Glazing & Edging
8. Final Checking, Adjustments to prescriptions
9. Patient complains, handling correction.
10. Repair of spectacles
11. Special types of spectacles monocells/ptosis hemianopic glasses
12. Neutralization of lenses
13. Focimeter
14. Shape of Spectacle Frame -Measurements & Making, Frame & Face Measurements
15. Refraction under the supervision

2. (b) REFRACTION

1. Refraction and prescription of glasses in OPD

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BACHELOR OF OPHTHALMIC TECHNOLOGY

2nd Year

UNIVERSITY PRACTICAL

Paper - 2-B F.M.-20 +5=25

2. B OPHTHALMIC INSTRUMENTS AND APPLIANCES

1. Lensometer, Lens gauge
2. Tonometer
3. Placido disc
4. Ketterometer
5. VKG
6. Specular Microscopy
7. Exophthalmometer
8. Perimeter
9. Non Contact Tonometer
10. Slit Lamp: Haag-Streit.
11. Photo-slit lamp
12. Fundus Camera
13. Contrast sensitivity tests
14. Glare acuity tests
15. Colour vision tests
16. Dark adaptometer

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BACHELOR OF OPHTHALMIC TECHNOLOGY

2nd Year

Sub:- INVESTIGATIVE OPHTHALMOLOGY & ORTHOPTICS

THEORY (Paper-3) F.M.-70 (Hrs.-3hrs)

INVESTIGATIVE OPHTHALMOLOGY & ORTHOPTICS

1. Orthoptics-General Concept
2. Ocular muscles and movements
3. AC/ A ratio
4. Measurements of angle of squint
5. Latent squint
6. Maddox rod
7. Maddox wing
8. Synoptophore
9. Manifest concomitant
10. Squint concomitant
11. Paralytic Squint
12. Head posture and its significance
13. Hess Screening and its Interpretations
14. Pleoptics
15. Occlusion -types and uses
16. Nystagmus
17. A. V. Syndromes
18. Testing of ARC
19. Amblyopia
20. Disorders of accommodation
21. Paediatric visual acuity assessment
22. Paediatric Refraction
23. Neural aspects of binocular vision

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BACHELOR OF OPHTHALMIC TECHNOLOGY

2nd Year

PRACTICAL UNIVERSITY PRACTICAL EXAMINATION

(Paper - 3)

F.M.- 40 +10=50

INVESTIGATIVE OPHTHALMOLOGY

1. Manifest squint work-up
2. Paralytic squint work-up
3. Pleoptics
4. Orthoptic Exercises

ORTHOPTICS

1. Latent squint work-up
2. Synptophore
3. Maddox wing
4. Maddox rods
5. Prism bar
6. Near point of accommodation
7. Near point of convergence
8. Fusion exercises

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BACHELOR OF OPHTHALMIC TECHNOLOGY

2nd Year

SUBSIDIARY

SUBJECT - COMPUTER SKILLS

THEORY PAPER-4 F.M.-20 (Hrs.-1.5hrs)

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PRACTICAL F.M.-15

Basic Computer Course (BCC)

SECOND YEAR

1. **Communication using the Internet:** Basic of Computer networks; LAN, WAN; Concept of Internet; Applications of Internet; connecting to internet; What is ISP; Knowing the Internet; Basics of internet connectivity related troubleshooting.
2. **WWW and Web Browsers:** World Wide Web; Web Browsing softwares, Search Engines; Understanding URL; Domain name; IP Address; Using e-governance website.
3. **Communications and collaboration:** Basics of electronic mail; Getting an email account; Sending and receiving emails; Accessing sent emails; Using Emails; Document collaboration; Instant Messaging; Netiquettes.
4. **Making Small Presentation:** Basics of presentation software; Creating Presentation/handouts.

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BACHELOR OF OPHTHALMIC TECHNOLOGY

2nd Year

Subsidiary Subject:- Public Health

THEORY PAPER-5 F.M.-20 (Hrs.-1.5hrs)

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PRACTICAL F.M.-15

- 1) Concepts in Health & Disease
- 2) Basics in Epidemiology
- 3) Nutrition and Health
- 4) Environment and Health
- 5) Communication in Health
- 6) Demography and Family Planning with National Population Policy 2000
- 7) Essential Medicine and Rational use of Drug (RUD)
- 8) Health care Delivery System with National Health Policy 2000
- 9) Health Planning and Management
- 10) Hospital waste Management
- 11) Disaster management
- 12) National Rural Health Mission
- 13) National Health Programmes in India

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BACHELOR OF OPHTHALMIC TECHNOLOGY 3rd Year

Subject- OCULAR MANIFESTATION OF SYSTEMIC DISEASES

THEORY (Paper-1) F.M.-70 (Hrs.-3hrs)

OCULAR MANIFESTATION OF SYSTEMIC DISEASES

1. Diabetic Retinopathy
2. Hypertensive Retinopathy
3. Tuberculosis of eye
4. Ocular manifestation of Systemic viral infections
5. Ocular complication of Thyroid diseases
6. Ocular Complication of collagen vascular diseases, Rheumatoid arthritis, SLE, Ankylosis or Thrombosis
7. Ocular Complication in Aortic Regurgitations

NO INTERNAL / UNIVERSITY PRACTICAL EXAMINATION

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BACHELOR OF OPHTHALMIC TECHNOLOGY 3rd Year

Subject- Contact Lens and Ocular Injuries & Emergency

THEORY (Paper-2) F.M.-70 (Hrs.-3hrs)

Contact Lens

1. Introduction of Contact Lenses
2. Contact Lens manufacturing
3. Tear film and contacts lens interactions
4. Optics of contacts lens
5. Indications and contraindications of contact lens use
6. Design description and parameter of a contact lens
7. Rigid contact lens
8. Soft contact lens
9. Extended wear lens
10. Rigid versus soft contact lens
11. Special contact lens fitting situations -
Contact lens fitting in astigmatism, Aphakia, Keratoconus, High Myopia, Presbyopia
12. Therapeutic contact lenses
13. Cosmetic lens
14. Complications of contact lens wear
15. Contact lens solutions
16. Care of contact lens

OCULAR INJURIES & EMERGENCY

1. Mechanical injuries
2. Chemical injuries
3. Thermal injuries
4. Radiational injuries
5. Foreign bodies
6. Angle closure glaucoma
7. Acute uveitis
8. Sudden loss of vision

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BACHELOR OF OPHTHALMIC TECHNOLOGY 3rd Year

**Sub.- Contact Lens and Ocular Injuries & Emergency
Paper - 2 Practical F.M.-50**

To do regular OPD visit and Duties.

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BACHELOR OF OPHTHALMIC TECHNOLOGY 3rd Year

SUBJECT – COMMUNITY OPHTHALMOLOGY, EYE BANK AND LOW VISION AIDS

THEORY (Paper-3) F.M.-70 (Hrs.-3hrs)

COMMUNITY OPHTHALMOLOGY

1. Concepts of community ophthalmology I & II
2. What is blindness and causes of blindness
3. The epidemiology of blindness
 - General principles I & II
 - Disease specific strategies I & II
4. Survey methodological I, II & III
5. Screening procedure in ophthalmology I & II
6. School eye screening programme
7. Primary eye care
8. Organization of out-reach services
9. Organization of reach-in-programme
10. Information, education and communication
11. Rehabilitation of visually handicapped
12. National programme for control of blindness I & II
13. Vision 2020: the right to sight

EYE BANK

1. Publicity
2. How to donate eye
3. Collection of eyes
4. Preservation of eyes
5. Pre & post operative instructions
6. Latest techniques for preservation of donor cornea

LOW VISION AIDS

1. Clinical assessment
2. Management of low vision
 - General factors
 - Magnification
 - Simple magnifiers
 - Spectacle – Borne visual aids
 - Keeler system
 - Other aids
 - Non-Magnifying visual aids
3. The success of visual aids

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BACHELOR OF OPHTHALMIC TECHNOLOGY 3rd Year

SUBJECT - COMMUNITY OPHTHALMOLOGY, EYE BANK AND LOW VISION AIDS

Paper - 3

Practical F.M.-50

1. To visit eye bank to collect various data and Counseling the patient
2. Attend community Ophthalmic Camp.
3. To Attend Cataract camp

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BACHELOR OF OPHTHALMIC TECHNOLOGY 3rd Year

SUBSIDIARY SUBJECT - Central Sterile Supply Dept.(CSSD)

THEORY (Paper-4-(a))

F.M.-35

(Hrs.-1.5 hrs)

- 1) Role of CSSD in health care, Planning, Layout.
- 2) Infection control and hygiene.
- 3) Packing material- textiles and surgical linen management.
- 4) Packaging shelf life and assembly of sets.
- 5) Dressing material—Standard and recommendations.
- 6) Surgical instruments maintenance.
- 7) Preparation and supplies for terminal sterilization.
- 8) Water quality and its importance in CSSD.
- 9) Different methods of sterilization.
- 10) Endoscopic sterilization.
- 11) Trouble shooting in sterilization.
- 12) Quality assurance in CSSD.
- 13) Safety in CSSD.
- 14) Supply of sterile instruments.
- 15) Receiving of used materials.
- 16) Record maintenance in CSSD.
- 17) Laundry function in CSSD.
- 18) Intradepartmental communications.

NO UNIVERSITY PRACTICAL EXAM

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BACHELOR OF OPHTHALMIC TECHNOLOGY 3rd Year

SUBSIDIARY SUBJECT - Hospital Waste Management -

THEORY (Paper-4-(b)) F.M.-35 (Hrs.-1.5 hrs)

1. Introduction to Biomedical wastes
2. Classification and categories of hospital wastes
3. Routes of transmission of disease by biomedical waste
4. Safety measures
5. The laws regarding biomedical waste treatment
6. Collection and segregation of Biomedical wastes
7. Transportation and storage of Biomedical wastes
8. Disposable techniques
9. Awareness and education
10. Persons at risk, rag pickers

NO UNIVERSITY PRACTICAL EXAM

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**SEMINARS: All students have to attend Seminars & CME
TO BE PRESENTED BY 3rd Year**

SEMINARS: All students have to attend Seminars.

A. Optics

- 1.1. Frames & Spectacle Lens Materials
- 1.2. Quality control methods of Spectacle Lens
- 1.3. Application of focimeter and Genva lens measure in Optical dispensing.

2. Refraction

- 2.1. Visual acuity methods
- 2.2. Principles and application of Retinoscopy
- 2.3. Explanation of various types of refractive error

3. Advanced Refraction

- 3.1. Comparison between Static and Dynamic Retinoscopy
- 3.2. Subjective Methods of Refraction
- 3.3. Objective Methods of Refraction

B. Anterior Segments

- 1.1. Introduction of eye disorders
- 1.2. Physiology & Investigations for corneal disorders
- 1.3. Physiology & Investigations for lenticular disorders

2. Posterior Segments

- 2.1. Anatomy and physiology of retina & optic nerve
- 2.2. Principles of direct & indirect Ophthalmoscopy
- 2.3. Principles of FA & Laser therapy

3. Tonometry

- 3.1. Principles & comparison of various types of tonometry
- 3.2. Standardization of various types of tonometers
- 3.3. Special methods in tonometry

4. Perimetry

- 4.1. Theoretical Comparison between Static & Kinetic Perimetry
- 4.2. Static & Kinetic Perimetry -practical view
- 4.3. Standardization of perimeters and the factors affecting its reliability.

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BACHELOR OF OPHTHALMIC TECHNOLOGY 4th Year

SUBJECT - Ocular Diseases (I) and management

THEORY (Paper-1)

F.M.-70

(Hrs.-3hrs)

- 1) **EYELID**
 - Stye
 - Chalazion
 - Blepharitis
- 2) **LACRIMAL SYSTEM**
 - Acute Dacryocystitis
 - Chronic Dacryocystitis
- 3) **CONJUNCTIVE**
 - Bacterial conjunctivitis
 - Viral conjunctivitis
- 4) **CORNEA**
 - Ulcer (Bacterial, Viral, Fungal)
 - Keratoconus
- 5) **ANTERIOR CHAMBER**
 - Hyphema
 - Hypopyon
- 6) **LENS**
 - Congenital Cataract
 - Senile Cataract
- 7) **GLAUCOMA**
 - Open Angle
 - Close Angle

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BACHELOR OF OPHTHALMIC TECHNOLOGY 4th Year

SUBJECT - Ocular Diseases (I) and management

Paper - 1

Practical

F.M.-50

To assist in various operative procedures in OT & OUT DOOR

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BACHELOR OF OPHTHALMIC TECHNOLOGY 4th Year

SUBJECT-

OCULAR DISEASES (II) & MANAGEMENT & ADVANCE OCULAR APPLIANCES

THEORY (Paper-2)

F.M.-70

(Hrs.-3hrs)

OCULAR DISEASES

1. Uvea

- Anterior Uveitis
- Posterior Uveitis

2. Retina

- Retinal Detachment
- Retinal Hemorrhage

3. Vitreous

- Vitreous Hemorrhage
- Floaters

4. Neuro - Ophthalmology

- Papilledema
- Cranial Nerve Palsies

ADVANCE OCULAR APPLIANCES

1. Automated Perimetry - Indications
2. OCT - Indications
3. Yag - Laser - Indications
4. Green Laser - Indications
5. Ultrasound - Indications
6. Biometry - Indications

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BACHELOR OF OPHTHALMIC TECHNOLOGY 4th Year

SUBJECT-
OCULAR DISEASES (II) & MANAGEMENT & ADVANCE OCULAR APPLIANCES

PRACTICAL (Paper-2) F.M.-50

To attend in ophthalmic OPD & EMERGENCY.
To assist in various ocular emergencies.

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BACHELOR OF OPHTHALMIC TECHNOLOGY 4th Year

SUBJECT - O.T. MANAGEMENT

THEORY (Paper-3) F.M.-70 (Hrs.-3hrs)

1. Introduction to ocular in general O.T Management.
2. Asepsis how to achieve
3. Anesthetic agents and where indicated
4. O.T. Sterilization procedures
5. Sterilization procedures of instruments .
6. Maintenance of instruments and equipments : Ophthalmic instruments
7. Maintenance of instruments and equipments : Orthoptics instruments
8. Maintenance of instruments and equipments : Surgical instruments
9. Maintenance of instruments and equipments : Optometric & Contact Lens equipment

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Dr. J. K. B.

BACHELOR OF OPHTHALMIC TECHNOLOGY 4th Year

SUBJECT - O.T. MANAGEMENT

PAPER - 3

PRACTICAL F.M.--50

1. To assist in CSSD (ophthalmic)
2. In OT management and maintenance of various data of ophthalmology.



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BACHELOR OF OPHTHALMIC TECHNOLOGY 4th Year

SUBSIDIARY SUBJECT PAPER - 4

Project work on ophthalmic technology (F.M.-50)

No university exam

SEMINARS: All students have to attend Seminars & CME

TO BE PRESENTED BY 4th Year

SEMINARS: All students have to attend Seminars.

1. Orthoptics

- 1.1. Diagnosis of latent and manifest squint
- 1.2. Paralytic squint investigations
- 1.3. Amblyopic and pleoptics treatment

2. Posterior Segments

- 2.1. Normal & pathological fundus
- 2.2. Fundus Camera & application of FA.
- 2.3. Lasers and its uses in Ophthalmology

3. Cornea and Refractive Surgery

- 3.1. Clinical investigations of pre-refractive Surgery
- 3.2. Clinical investigations of post-refractive Surgery
- 3.3. Clinical analysis of refractive Surgery

4. Advanced Refraction and Contact Lenses

- 4.1. Low vision aids for poor vision patients
- 4.2. Materials and manufacturing techniques of contact lenses
- 4.3. Indications & Contra-indications for Contact Lenses

5. Advanced Contact Lenses

- 5.1. Fitting philosophies of contact lenses
- 5.2. Post fitting problems of contact lenses and its remedy
- 5.3. Toric/Bifocal Contact lenses

6. Perimetry in Ocular disorders

- 6.1. Visual fields defects in Glaucoma
- 6.2. Visual fields defects in retinal & neurological disorders
- 6.3. Latest development

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BOOKS FOR ANATOMY (TEXT & REFERENCE)

<u>Name Of Books</u>	<u>Author's Name</u>
1) Understanding Human Anatomy & Physiology	William Davis
2) A Text Book of Anatomy	Chaurasia
3) A Text Book of Human Anatomy	T.S.Rangnathan
4) Human Anatomy (Description & Applied)	Fattana
5) Physiology and Anatomy with Practical consideration	ESTER .M Grishcimer

BOOKS FOR PHYSIOLOGY (TEXT & REFERENCE)

<u>Name Of Books</u>	<u>Author's Name</u>
1) Text Book of Physiology	Guyton
2) Human Physiology	Chatterjee
3) Concise Medical Physiology	Choudhary
4) Review of Medical Physiology	Ganong

BOOKS FOR BIO - CHEMISTRY (TEXT & REFERENCE)

<u>Name Of Books</u>	<u>Author's Name</u>
1) Bio-chemistry for Medical students	Vasudewan
2) Text book of Bio-chemistry	Harper
3) Clinical Chemistry	Kaplan
4) Clinical Chemistry	Varley
5) Clinical Chemistry	TEITZ
6) Text book of Medical Biochemistry	Ramakrishna
7) Biochemistry	Das
8) Practical Biochemistry	K. P. Sinha

BOOKS FOR PATHOLOGY (TEXT & REFERENCE)

<u>Name Of Books</u>	<u>Author's Name</u>
1) Laboratory Technology	Ramanic Sood
2) Laboratory Technology	Gwadkor
3) Clinical Pathology & Bacteriology	Sachdev K. N.
4) Text book of Pathology	Krishna
5) Histopathology Techniques	Culling
6) Histopathology Techniques	Bancroft
7) Cytology	Koss
8) Diagnostic Cytopathology	Winfred Greg
9) Practical Haematology	Dacie & Lewis
10)Text book of Medical Laboratory For Technician	Satish Gupta

BOOKS FOR MICROBIOLOGY (TEXT & REFERENCE)

<u>Name Of Books</u>	<u>Author's Name</u>
1) Medical Microbiology	Anathnarayana&
2) The Practice of Medical Microbiology	Roberty Cruckshank
3) Parasitology-Interpretation to Clinical Medicine	Chatterjee
4) Medical Mycology	Rippon
5) Medical Mycology	Emmons
6) Mediical Parasitology	Ajit Damle

BOOKS FOR COMPUTER (TEXT & REFERENCE)

REFERENCE :

1. A. Mansoor, "Internet and Web Design Made Easier," Pragya Publication.
2. B. Ram, " Computer Fundamentals.
3. T. N. Trainer, "Computer" McGraw Hill.

BOOKS FOR ENGLISH (TEXT & REFERENCE)

REFERENCE

1. English Grammar Collins, Birmingham University, International Language Data Base, Rupa & Co.1993
2. Wren and Martin - Grammar and composition, 1989, Chanda Inter& Co.Delhi
3. Letters for all Occasions, A S Myers. Pub - Harper Perennial
4. Spoken English V Shasi Kumar and P V Dhaniya Pub by Tata Mcgraw Hill, New Delhi
5. Journalism Made Simple D Wainwright.
6. Writers Basic Book self Series, Writers Digest series
7. Interviewing by Joan Clayton Platkon
8. Penguin Book of Interviews.

BOOKS FOR Public Health (TEXT & REFERENCE)

Refrence

- 1) Paarks texts bookpreventive and Social medicine
- 2) Text book of Community medicine
- 3) Health Policies and Programme in India

BOOKS FOR OPHTHALMIC TECHNOLOGY

Name of books	Author's Name
17. Essential of ophthalmology	Dr. Saman Kumar Basak, Dr. A. K. Khurana
18. Clinical ophthalmology	Parhon of the eye, Dr. P. Kanki
19. Optics and Refraction	Dr. A. K. Khurana

BOOKS FOR HOSPITAL WASTE MANAGEMENT

- 1) Hospital waste management and its monitoring ,
Madhuri Sharma - J.P. Brother's medical publisher(P) Ltd.

BOOKS FOR MEDICINE

Davidson's text book of medicine

BOOKS FOR PHARMACOLOGY

A short text book of pharmacology - Tripathi

BOOKS FOR CSSD

Hospital Sterlization - J.P. Publication
Anand Nagaraja Prem

BOOKS FOR COMPUTER (TEXT & REFERENCE)

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1. A. Mansoor, "Internet and Web Design Made Easier," Pragya Publication.
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Davidson's text book of medicine

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A short text book of pharmacology - Tripathi

BOOKS FOR CSSD

Hospital Sterlization - J.P. Publication
Anand Nagaraja Prem

Nilima Sinha
Dr. Nilima Sinha

Shekhar Kumar
Dr. Sailendra Kumar

Shekhar Chaoudary
Dr. Shekhar Chaoudary

U.P. Sinha
Dr. U.P. Sinha