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
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 & its Nerve supply
- Ear
- Nose
- Tongue
1. Labelled Diagram of different organs and bones
2. Surface markings of the Body
3. Demonstration of histological slides:

NO UNIVERSITY EXAMINATION
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


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.

*Contd....pg. no.05*
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

NO UNIVERSITY PRACTICAL EXAMINATION

Contd.....pg. no.-06
BACHELOR OF OPHTHALMIC TECHNOLOGY

1st Year

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
   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

Contd.....pg. no.-07
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.
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

NO UNIVERSITY PRACTICAL EXAMINATION

Contd....pg. no.-09
BACHELOR OF OPHTHALMIC TECHNOLOGY
Sub: Microbiology THEORY (Paper-(4-a)) F.M.-35 (Hrs.-1.5hrs)

1st Year

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 its 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

Contd....pg. no.-10
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

NO UNIVERSITY PRACTICAL EXAMINATION
ACHELOR OF OPHTHALMIC TECHNOLOGY  

Subject: 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.

(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
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

Contd.....pg. no.-13
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: Benedict's 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

NO UNIVERSITY PRACTICAL EXAMINATION

Contd.....pg. no.-14
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:
Practice 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

Contd.....pg. no.-15
BACHELOR OF OPHTHALMIC TECHNOLOGY

1st Year

SUBSIDIARY SUBJECT - COMPUTER SKILLS

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

&

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.

Contd....pg. no.-16
BACHELOR OF OPHTHALMIC TECHNOLOGY

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

Contd.....pg. no.-17
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

NO UNIVERSITY PRACTICAL EXAM

Contd.....pg. no.-18
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 & diopteric 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
22. Myopia
23. Hypermetropia
24. Astigmatism
25. Aphakia/Pseudo-phakia
26. Presbyopia
27. Keratoconus
29. Refraction of irregular reflex
30. Accommodation & Convergence -1, Far point, near point, range, amplitude of accommodation
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 - Aspheric
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 complaints, 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

2. Myopia
3. Hypermetropia
4. Astigmatism
5. Aphakia/Pseudo-phakia
6. Presbiopia
7. Keratoconus
9. Refraction of irregular reflex
10. Accommodation & Convergence -1. Far point, near point, ranges. Amplitude of accommodation
12. Retinoscopy -Principle & Method
13. Objective Refraction
14. Subjective Refraction
15. Cross Cylinder

Contd.....pg. no.-20
2 B. OPHTHALMIC INSTRUMENTS AND APPLIANCES

1. Indirect Ophthalmoscope
2. Direct Ophthalmoscope
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. Keterometer
12. Corneal Examination - 3. V KG
13. Corneal Examination - 4. Specular Microscopy
14. Corneal Examination - 5. Aesthesiometer
15. Exophthalmometer
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
2. A-(a) OPTICS
   1. Workshop
   2. Manufacturing Spectacle Lens
   3. Manufacturing Bifocal Lenses
   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
2. B OPTHALMIC INSTRUMENTS AND APPLIANCES

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

Contd.....pg. no.-24
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
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.
Subsidiary Subject: Public Health

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

&

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
Subject- Ocular Manifestation of Systemic Diseases

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, Ankylaris or Thrisis
7. Ocular Complication in Aortic Regurgitations

No Internal / University Practical Examination
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
To do regular OPD visit and Duties.
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
BACHELOR OF OPHTHALMIC TECHNOLOGY  3rd Year

SUBJECT – COMMUNITY OPHTHALMOLOGY, EYE BANK AND LOW VISION AIDS
Paper – 3

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

Contd.....pg. no.-32
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

Contd.....pg. no.-33
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

Contd.....pg. no.-34
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.
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

Contd.....pg. no.-36
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

Contd.....pg. no.-37
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

Contd.....pg. no.-38
BACHELOR OF OPTHthalmic 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.

Contd.....pg. no.-39
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

Contd.....pg. no-40
1. To assist in CSSD (ophthalmic)
2. In OT management and maintenance of various data of ophthalmology.
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

Contd.....pg. no.-42
### Books for Anatomy (Text & Reference)

<table>
<thead>
<tr>
<th>Name of Books</th>
<th>Author's Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Understanding Human Anatomy &amp; Physiology</td>
<td>William Davis</td>
</tr>
<tr>
<td>2. A Text Book of Anatomy</td>
<td>Chaurasia</td>
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<tr>
<td>3. A Text Book of Human Anatomy</td>
<td>T.S.Rangrathan</td>
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<tr>
<td>4. Human Anatomy (Description &amp; Applied)</td>
<td>Fattana</td>
</tr>
<tr>
<td>5. Physiology and Anatomy with Practical Consideration</td>
<td>Ester M. Grishcimer</td>
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</table>

### Books for Physiology (Text & Reference)

<table>
<thead>
<tr>
<th>Name of Books</th>
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<tbody>
<tr>
<td>1. Text Book of Physiology</td>
<td>Guyton</td>
</tr>
<tr>
<td>2. Human Physiology</td>
<td>Chatterjee</td>
</tr>
<tr>
<td>3. Concise Medical Physiology</td>
<td>Choudhary</td>
</tr>
<tr>
<td>4. Review of Medical Physiology</td>
<td>Ganong</td>
</tr>
</tbody>
</table>

### Books for Biochemistry (Text & Reference)

<table>
<thead>
<tr>
<th>Name of Books</th>
<th>Author's Name</th>
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</thead>
<tbody>
<tr>
<td>1. Bio-chemistry for Medical Students</td>
<td>Vasudewanan</td>
</tr>
<tr>
<td>3. Clinical Chemistry</td>
<td>Kaplan</td>
</tr>
<tr>
<td>4. Clinical Chemistry</td>
<td>Varley</td>
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<tr>
<td>5. Clinical Chemistry</td>
<td>TEITZ</td>
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<tr>
<td>6. Text book of Medical Biochemistry</td>
<td>Ramakrishna</td>
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<tr>
<td>7. Biochemistry</td>
<td>Das</td>
</tr>
<tr>
<td>8. Practical Biochemistry</td>
<td>K. P. Sinha</td>
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</table>

### Books for Pathology (Text & Reference)

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<tbody>
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<td>1. Laboratory Technology</td>
<td>Ramanic Sood</td>
</tr>
<tr>
<td>2. Laboratory Technology</td>
<td>Gwadkor</td>
</tr>
<tr>
<td>3. Clinical Pathology &amp; Bacteriology</td>
<td>Sachdev K. N.</td>
</tr>
<tr>
<td>4. Text book of Pathology</td>
<td>Krishna</td>
</tr>
<tr>
<td>5. Histopathology Techniques</td>
<td>Culling</td>
</tr>
<tr>
<td>6. Histopathology Techniques</td>
<td>Bancroft</td>
</tr>
<tr>
<td>7. Cytology</td>
<td>Koss</td>
</tr>
<tr>
<td>8. Diagnostic Cytopathology</td>
<td>Winfred Greg</td>
</tr>
<tr>
<td>9. Practical Haematology</td>
<td>Dacie &amp; Lewis</td>
</tr>
<tr>
<td>10. Text book of Medical Laboratory For Technician</td>
<td>Satish Gupta</td>
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### Books for Microbiology (Text & Reference)

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<tr>
<td>1. Medical Microbiology Panikar</td>
<td>Anathnarayana &amp;</td>
</tr>
<tr>
<td>2. The Practice of Medical Microbiology</td>
<td>Roberty Cruckshank</td>
</tr>
<tr>
<td>3. Parasitology-Interpretation to Clinical Medicine</td>
<td>Chatterjee</td>
</tr>
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<td>4. Medical Mycology</td>
<td>Rippon</td>
</tr>
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<td>5. Medical Mycology</td>
<td>Emmons</td>
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<td>6. Medical Parasitology</td>
<td>Ajit Damle</td>
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</tbody>
</table>

Contd.....pg. no.-43
BOOKS FOR COMPUTER (TEXT & REFERENCE)


BOOKS FOR ENGLISH (TEXT & REFERENCE)

2. Wren and Martin - Grammar and composition, 1989, Chanda Inter& Co. Delhi
4. Spoken English V Shashi Kumar and P V Dhanija 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

BOOKS FOR Public Health (TEXT & REFERENCE)

1) Paecks texts book preventive and Social medicine
2) Text book of Community medicine
3) Health Policies and Programme in India

BOOKS FOR OPHTHALMIC TECHNOLOGY

Name of books
17. Essential of ophthalmology
18. Clinical ophthalmology
19. Optics and Refraction

Author's Name
Dr. Saman Kumar Basak, Dr. A. K. Khurana
Parhon of the eye, Dr. P. Kanki
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 Sterilization - J.P. Publication
Anand Nagaraja Prem
REFERENCE:
1. A. Mansoor, "Internet and Web Design Made Easier," Pragya Publication.
2. B. Ram, "Computer Fundamentals.

BOOKS FOR ENGLISH (TEXT & 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
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Dr. Nilima Sinha  Dr. Sailendra Kumar  Dr. Shekhar Chaoudary  Dr. U.P. Sinha