



**Government of Jammu and Kashmir**  
**Services Selection Board**  
**Sehkari Bhawan Rail Head Complex, Jammu**  
**([www.jkssb.nic.in](http://www.jkssb.nic.in))**

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**NOTICE**

It is notified for the information of the concerned candidates who have applied for the posts advertised vide **Advertisement Notification Nos01, 02, 03, 04, 05 and 08 of 2019**, that the item wise syllabi for the posts detailed below is given as annexure "A" to "M" to this notice.

<b>Detail of Items/Posts</b>		
<b>Item No /Advt. No (s)</b>	<b>Name of the post</b>	<b>Syllabus Annexed</b>
013 of 01, 02, 03, 04 and 05 of 2019	Radio-therapy technician	<b>Annexure "A"</b>
007 of 01, 02, 03, 04 and 05 of 2019	Tuberculosis and Chest diseases Health Visitor	<b>Annexure "B"</b>
009 of 01, 02, 03, 04 and 05 of 2019	Audiometry Technician	<b>Annexure "C"</b>
010 of 01, 02, 03, 04 and 05 of 2019	Technical Assistant / Technician	<b>Annexure "D"</b>
014 of 01, 02, 03, 04 and 05 of 2019	Technical Assistant / Technician	<b>Annexure "E"</b>
008 of 01, 02, 03, 04 and 05 of 2019	Theatre Assistant / Technician	<b>Annexure "F"</b>
036 of 01, 02, 03, 04 and 05 of 2019	Dietician	<b>Annexure "G"</b>
021 of 01, 02, 03, 04 and 05 of 2019	Dental Technician	<b>Annexure "H"</b>
029 of 01, 02, 03, 04 and 05 of 2019	Nursing and Para-Medical Staff/ Technical Assistant/ Technician	<b>Annexure "I"</b>
005 of 01, 02, 03, 04 and 05 of 2019	E.C.G Technician	<b>Annexure "J"</b>
011 of 01, 02, 03, 04 and 05 of 2019	Radiographic Technician	<b>Annexure "J"</b>
002 of 01, 02, 03, 04 and 05 of 2019	Public Health Nurse	<b>Annexure "K"</b>
030 of 01, 02, 03, 04 and 05 of 2019	Clinical Staff for casualty bed	<b>Annexure "L"</b>

001 of 01, 02, 03, 04 and 05 of 2019	Junior Staff Nurse	<b>Annexure "M"</b>
026 of 01, 02, 03, 04 and 05 of 2019	Matron/Head Nurse	<b>Annexure "M"</b>
027 of 01, 02, 03, 04 and 05 of 2019	Staff Nurse	<b>Annexure "M"</b>
001, 002, 003, 004 and 005 of 08 of 2019	Junior Staff Nurse	<b>Annexure "M"</b>

The candidates are also intimated that there shall be negative marking for wrong answers (-0.25 for each wrong answer) attempted in the said examination.

(Ranjeet Singh) KAS  
Secretary  
Services Selection Board  
Jammu

**No. SSB/Secy/Sel/2019/2217-21**

**Dated: 21.03.2019**

Copy to the:-

1. Principal Secretary, Health and Medical Education Department, Civil Sectt. for information.
2. Director Information, J&K Government, Jammu with the request to get the said notification published in at least three leading local newspaper of Jammu/Srinagar on three consecutive dates.
3. Private Secretary to the Ld. Chairman for information to Chairman.
4. I/c Web site.
5. Syllabus file.

# ANNEXURE "A"

## SYLLABUS

- Introduction to Healthcare Delivery System in India
  - Basic Computers and Information Science
  - Communication and Soft Skills.
  - Medical Terminology and Record keeping (Including anatomical terms)
  - Medical Law and Ethics
  - Introduction to Quality and Patient safety (including Basic emergency care and life support skills, Infection prevention and control, Biomedical waste management, Disaster management and Antibiotic resistance.
  - Professionalism and values.
  - Biostatistics and Introduction to research methodology
  - Principals of Management
  - Community Orientation and Clinical visit
- 
- Elementary Mathematics and Physics.
  - Human Anatomy and Physiology
  - Radiographic Anatomy
  - Oncology Science
  - Principles of radiotherapy and radiotherapy techniques.
  - Radiation Quantities, Units and Detection / Measurement
  - Basic Radiation Physics.
  - Radiotherapy Equipment

- Radiation Safety
  - Patient care, positioning and immobilization.
  - Quality Assurance in Radiotherapy
  - Basic Radiotherapy Physics
  - Biological Effects of Radiation
  - Clinical Radiobiology
- 
- Mould Room / Motion Management Techniques.
  - Special RT Techniques and Recent advances.
  - Radiological / Nuclear Medicine / Other Imaging Techniques in Radiotherapy Planning.
  - Radiotherapy Treatment delivery
  - Operational Issues in RadioTherapy.

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# ANNEXURE "B"

## SYLLABUS

### **1. An Architecture for Physiological Function**

- Development, ultra structure and Anatomy of Respiratory tract and Lungs.
- Embryology of lungs, heart, mediastinum and diaphragm.
- Development anomalies
- Surgical and endoscopic and applied Anatomy of chest and neck including Lymphatic drainage.
- Radiographic Anatomy (plain skiagram, CT, MRI, Ultrasound etc.)

### **2. Physiological Principles**

- Control of Ventilation and role of peripheral and central Chemoreceptors & pulmonary mechanics.
- Ventilation, pulmonary Blood Flow, Gas Exchange, Blood Gas Transport and assessment of pulmonary functions.
- Non-respiratory immunological and endocrine functions of lung.
- Inhalation kinetics and its implication in aerosol therapy, sputum induction etc.
- Acid-base and electrolyte balance.

### **3. Approach to the Patient with Respiratory signs and symptoms**

- Basic signs and symptoms of lung diseases
- Pathogenesis, evaluation of dysnoea and abnormal breathing patterns.
- Pulmonary manifestations of systemic diseases.

### **4. Diagnostic Procedures**

- Trache Bronchial Secretion/Transbronchial Aspirations
- Bronchoscopy and related Procedures
- Radiographic Evaluation of the Chest and Computer Tomography and MRI
- Gram's stain, Zeihl-Neelsen stain for AFB, Fluorescent Microscopy, fungus Stain, Gomori stain for p. carini.
- Immunological Tests including Mantoux.
- Polymerase chain reaction, D. N. A. probe, Bactec tests.
- Thoracocentesis, Biopsy FNAC/FNAB
- Spirometry, ABG, Diffusion studies

### **5. Mycobacterial diseases of the Lungs**

- Epidemiology, Microbiology and Prevention of Tuberculosis
- Pathogenesis of Pulmonary Tuberculosis and clinical Manifestations and diagnosis of Mycobacterial Disease
- Diseases caused by Mycobacteria other than Mycobacterium Tuberculosis
- Treatment of Mycobacterial Diseases of the Lungs caused by Mycobacterium Tuberculosis

- RNTCP
- Treatment of pulmonary tuberculosis in hepatic renal and endocrine disorders and in pregnancy.
- Multidrug resistant tuberculosis
- AIDS & tuberculosis
- Chemoprophylaxes

## **6. Immunological Disorders / Interstitial Disorder**

- Immune defenses of the lung and Cellular Communication in Respiration Immunity.
- Sarcoidosis
- Hypersensitivity Pneumonitis and Pulmonary Manifestations of Collagen Vascular Diseases.
- Eosinophilic Pneumonias and Tropical eosinophilia
- Granuloma like Wegener's, Churg Strauss etc.
- Reactions of the Interstitial Space to injury
- Pulmonary Fibrosis
- Occupational and Environmental Pulmonary Diseases.

## **7. Non-infection disorders of the pulmonary Parenchyma**

- Aspiration and inhalational (non-Occupational) Disease of the Lung
- Pulmonary Edema
- Drug induced pulmonary diseases

## **8. Pulmonary circulatory disorders**

- Pulmonary Hypertension and Cor Pulmonale
- Pulmonary thromboembolic Disease.

## **9. Obstructive diseases of the lungs**

- Asthma Epidemiology, General Features, Pathogenesis, Pathophysiology and therapeutic modalities Chronic Obstructive Pulmonary Diseases.
- Immunotherapy
- Long term Oxygen therapy
- Inhalation therapy
- Cystic Fibrosis
- Pulmonary Rehabilitation
- Acute Bronchitis and Bronchiolitis Obliterans
- Upper airway obstruction
- Bronchiolitis Obliterans organizing Pneumonia (BOOP)

## **10. Hypoventilation Syndromes and sleep disorders**

- Disorders of Alveolar Ventilation
- Sleep Apnea Syndrome
- Obesity

## **11. Non – Tuberculosis infections of the lungs**

- Pneumonias caused by Gram-Positive Bacteria, Gram Negative Aerobic- Organisms and Anaerobic Organisms and Anaerobic infections of the Pleura

- Unusual Bacterial Pneumonia including viral or rickettsial
- Community Acquired Pneumonia
- Bronchiectasis
- Approach to patient with Pulmonary Infections
- Nosocomial Pneumonia
- Systemic Infection and the Lungs

## **12. Cancer of the lungs**

- Biology of the lung cancer, small cell and non small cell
- Epidemiology, Pathology, Natural History and Clinical Picture of the Carcinoma of the Lung.
- Diagnostic Approach of Pulmonary Nodules
- Small Cell Lung Cancer
- Medical Management and Surgical Treatment of Non-small Cell Lung Cancer and Paraneoplastic syndrome
- Radiation Therapy in the Management of the Carcinoma of the Lung
- Benign and malignant Neoplasms of the Lung other than Bronchogenic Carcinoma and thymic and neuro fibromatous tumors, Neoplasms of the Pleura, Chest Wall and diaphragm
- Prevention of Neoplasia

## **13. Diseases of the Mediastinum / Pleura / Occupational lung disorder.**

- Non-neoplastic disorders of the Mediastinum
- Primary Neoplasms and cysts of the Mediastinum
- Pleural Dynamics and Effusions
- Non neoplastic and Neoplastic Pleural Effusions
- Pneumothorax
- Pyothorax and Broncho-pleural; fistula
- Pleural thickening, fibrosis and calcification
- Organic and inorganic dust exposure and their effects
- Environmental dust measurements, radiation and lung, occupational asthma and occupational cancer.

## **14. Acute Respiratory Failure**

- Acute Respiratory failure: Introduction and Overview
- Adult Respiratory Distress Syndrome: Clinical Features, Pathogenesis, Sequential Morphological changes and Management
- Acute Respiratory failure in the patient with Obstructive Airways Disease
- Respiratory Muscles and clinical Implications of Respiratory Muscle Fatigue
- Oxygen Therapy
- Mechanical ventilation

## **15. Miscellaneous**

- Effects and Hazards of smoking and passive smoking and its prevention in individual and community
- Demonstration and use of equipments (Ventilator, Bronchoscope, Capnography, Pulse-oxymeter etc.)
- Pre – and Post – operative evaluation AND Management of Thoracic Surgical patient.

- Chest Trauma /Trauma related lung dysfunction
- Lung Transplantation
- Pulmonary function test and its Interpretations in Determining the Disability
- Spirometry, compliance , resistance, lung volume, diffusions
- Blood gas analysis
- Cardiopulmonary exercise testing
- Bronchoprovocation tests

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# ANNEXURE "C"

## SYLLABUS

### ➤ Audiology

#### ✓ **Sound and Hearing**

- Definition of sound
- Generation and transmission of sound
- Physical and psychological attributes of sound
- Range of human hearing
- Structure of the ear, different parts of the ear
- Age-wise behavioral responses to sound
- Description of hearing
- Functions of hearing, role of hearing in learning

#### ✓ **Hearing Loss**

- Definition and meaning of hearing loss
- Causes and types of hearing loss
- Effects of hearing loss
- Signs & symptoms of hearing loss
- Prevention of hearing loss
- Early identification and its importance
- Associated problems

#### ✓ **Evaluation of hearing**

- Methods of testing hearing, tuning fork, audiometry, parts of an audiometer, audiogram
- Procedure for obtaining an audiogram, different types of audiograms
- Factors that affect hearing evaluation
- Informal testing, methods of screening and different conditions for hearing testing, use of different stimuli in rural set-ups.
- Care and maintenance of equipment, preparation and maintenance of check list
- List of equipment, specifications for the same

#### ✓ **Hearing aids & Earmolds**

- Definition of hearing aid
- Need for a hearing aid
- Different parts of a hearing aid
- Different types of hearing aids
- Earmold, role of earmold, making custom earmolds
- Selection of conventional hearing aids

#### ✓ **Counseling on use, troubleshooting and rehabilitation**

- Use, care and maintenance of hearing aid
- Trouble shooting and minor repairs of hearing aids
- **Counselling –**
  - ✚ On hearing aid acceptance, use and care
  - ✚ On auditory learning
  - ✚ On speech and language intervention
  - ✚ Home training
- Role of Speech and Hearing technician in relation to the school for the deaf/retarded, special schools for spastics speech and hearing units and centres, other rehabilitation centres, P.H.Cs.
- Organization of community awareness programmes, exhibition and selecting the materials required, parent meeting. Team approach and role of speech and hearing technician in the team.
- Early identification, Therapy and follow up
- Government schemes available for the welfare of the handicapped
- List of addresses for referral points

## ➤ Speech and Language Pathology

### ✓ **Introduction to communication, language & Speech.**

- Definitions of communication, language & speech
- Interrelation between speech, language & hearing
- Prerequisites of communication: speaker, listener, speech chain
- Functions of communication
- Types of language: Non-verbal: signs, symbols, gesture. Verbal: speech
- Parameters of language: orientation to phonology, semantics, syntax & pragmatics
- Parameters of Speech: voice, articulation, fluency, prosody
  - ✚ Voice: pitch, loudness, quality;
  - ✚ -Fluency: rate, continuity, effort;
  - ✚ -Prosody: stress, intonation & rhythm

### ✓ **Speech mechanism & speech production**

- Structure and functions of the speech mechanism
  - ✚ Nervous system
  - ✚ Respiratory system
  - ✚ Phonatory system
  - ✚ Resonatory system
  - ✚ Articulatory system
- Description of the speech sounds
  - ✚ Voicing
  - ✚ Manner of articulation
  - ✚ Place of articulation

### ✓ **Acquisition / Development of Language and speech**

- Characteristics of normal speech & language and communication
- Stages in the development of language and the important milestones
- Stages in the acquisition of speech sounds/ phonology & important milestones
- Development of communication
- Factors affecting the acquisition of speech, language & communication

### ✓ **Disorders of speech and Language**

- Classification of the disorders
- Disorders of language: general behaviours, language characteristics: expressive & receptive
  - ✚ Mental retardation
  - ✚ Autism
  - ✚ Cerebral palsy
  - ✚ Childhood aphasia
  - ✚ Attention Deficit disorder

### ✓ **Disorders of speech : General Characteristics, symptoms**

- Disorders of speech: general characteristics, symptoms
  - ✚ Disorders of voice: pitch, quality
  - ✚ Disorders of articulation: structural, neurological, environmental
  - ✚ Disorders of fluency: NNF, stuttering, neurogenic stuttering, cluttering

### ✓ **Prevention and Early identification of communication disorders**

- Definition, Types of prevention
- General preventive measures
- Checklist/ Tools for prevention and Early identification of communication disorders
- Guidance to parents
- Screening tools/ High Risk Register

## ➤ **Basic Medical Sciences related to speech & Hearing**

- ✓ General *introduction*, definitions. Coronal / sagittal / plane) Planes. Definition of anatomy, morphology, physiology, histology, embryology.
- ✓ Definition of Cell and organelles, tissue, organ system, specialized tissues like nervous tissue, vascular tissue, muscle and bone tissue
- ✓ Nervous system: Definition of neuron, synapse, reflex action, bio electrical phenomena, action potential, depolarisation, division and functions of the nervous system, brain – general lobes, reticular formations, basal ganglia, cerebellum, circle of willis, cranial nerves, spinal cord, CSF – formation & flow.
- ✓ Circulatory system: Definition of capillaries, arteries, veins, cardiac cycle, blood brain barrier, aneurysm, vascular shock – its reference to aphasia / speech disorders.
- ✓ Respiratory system: General outline, detailed study of trachea, larynx and nasopharynx, mechanism of respiration – internal and external influence, nervous control – vital capacity – tidal volume, residual air, artificial respiration (in brief).
- ✓ Definition of inflammation, infection, tumor – benign & malignant, tissue healing
- ✓ Genetics :introduction – structure of DNA and RNA, karyotyping, family tree (pedigree chart), symbolic representation , inheritance, autosomal dominant, autosomal recessive, sex chromosomal disorders, structural aberrations, mutation (in brief).

- ✓ Endocrine system : Definition of hormone, functions of thyroid hormone, growth hormone, androgen, testosterone and its influence in voice disorders.
- ✓ Anatomy & Physiology of external, middle & inner ear, auditory pathways, vestibular pathway. Diseases of the external middle and inner ear leading to hearing loss: Congenital malformations, traumatic lesions, infections, management of middle ear and Eustachian tube disorders.
- ✓ Other causes of hearing loss – Facial paralysis, Tumors of the cerebello- pontine angle, Acoustic neuroma. Infection and management of inner ear diseases. Cochleo-vestibular diseases and its management.
- Anatomy & Physiology of pharynx & oro-peripheral structures Causes of speech disorder, Disorders of the mouth, Tumors of the jaw and oral cavity, nasopharynx and pharynx, pharyngitis, Diseases of tonsils and adenoids.
- ✓ Oesophageal conditions: Congenital abnormality – Atresia, Tracheo-oesophageal fistula, Stenosis, Short oesophagus. Neoplasm – Benign, Malignant, Lesions of the oral articulatory structures like cleft lip, cleft palate, submucosal cleft, Velopharyngeal incompetence.
- ✓ Anatomy & Physiology of larynx – physiology of phonation / physiology of respiration.
- ✓ Congenital diseases of the larynx – difference between an infant and an adult larynx. Stridor – causes of infantile stridor. Disorders of structure – Laryngomalacia, Bifid epiglottis, Laryngeal web, Atresia, fistula, Laryngeal cleft, Tumors and Cysts, Laryngitis, Laryngeal trauma and Stenosis. Neuromuscular dysfunctions of the larynx – Vocal cord palsy, Spastic dysphonia, Hypothyroidism, gastro oesophageal reflux disorders, Laryngectomy, artificial larynx, oesophageal speech, tracheo oesophageal puncture.

## ➤ Psychology

- ✓ Meaning and definition of psychology - relevance to speech, hearing and language. Child development: motor, emotional, cognitive - intellectual and social, stages & relevance.
- ✓ Mental retardation: definition, causes, assessment and psycho/social and educational implications. Developmental skills - helping the child acquire age appropriate developmental skills. Psychological problems associated with speech and hearing disorders - temper tantrum, hyperactive behaviour, withdrawal tendency, aggressive behaviour, neuroses like phobia, autistic behaviour.
- ✓ Psychological testing - aims, factors affecting testing, developmental schedules, IQ test and their importance.
- ✓ Attitude of parents and of the client towards handicap and rehabilitation procedures.
- ✓ Behaviour therapy and play therapy.

## ➤ Community Based Rehabilitation

- ✓ Assessment of communication disorders
  - ✚ **Case history** - Importance of case history, Procedure for obtaining case history, Methods of gathering information, Specific information to be collected w.r.t various disorders, Relevance of information to be included in case history, Identification, history and description of problem, Counter check of information gathered, Do's and Don'ts while taking case history
  - ✚ Arriving at provisional diagnosis by collecting and collating different information, Measures to be taken when contradictory findings are found
  - ✚ Making appropriate referrals to other relevant professionals, Ways of referral- reporting & requesting and informing parents/caregivers on diagnosis and prognosis.
  - ✚ Role of observation therapy in diagnosis and prognosis
- ✓ Management of communication disorders

- ✚ Team approach, Members of the Team: speech and hearing professionals, medical specialists, psychologists, special educators, regular school teachers, social workers, village leader and prospective employer/ institutions, Details of other referral points, Role of speech & hearing technicians in the team.
- ✚ Bases of speech & language therapy and hearing intervention-common procedures in therapy
- ✚ Planning speech therapy programme for articulation, voice, fluency, language Deviations and delays (including material and instruments needed), Implications and impact of hearing loss /mental retardation/ cerebral palsy
- ✚ Analysing needs of the patients, planning short term and long term goals, activities & teaching aids for therapy, assessing progress, Recognizing small changes in progress
- ✚ Imparting guidelines to the parents for practice of activities at home, Training parents as equal partners, Importance of speech and language stimulation
- ✚ Reinforcers, methods of reinforcement
- ✚ Tips on parent counseling and guidance

#### ✓ Auditory training & speech reading

- ✚ Acceptance of hearing aid by self and family
- ✚ Auditory training- need and its importance. General principles, steps in auditory training, Materials needed, Assessment of auditory performance, factors affecting auditory training- age of the child, type of hearing loss, intensity of stimuli and others. Methods of recording auditory response and progress, Games and activities for individual and group auditory training.
- ✚ Speech reading, General principles, Methods of speech reading, Speech reading, cued speech, activities for speech reading in day to day communication, Specific planning for speech reading lessons, Factors (environment, speaker, language reader) affecting speech reading.

#### ✓ Non/verbal communication

- ✚ Augmentative and alternative communication (AAC)- Definition
- ✚ Types of AAC:
  - ✚ Aided- Definition and types of symbols with examples (objects, pictures, orthography, blissymbols), Low technology (communication boards, communication wallets, communication books & others) and high technology aids (few softwares), Dedicated and Nondedicated systems, Adaptation of aided systems to individual needs.
  - ✚ Unaided- Definition and types of symbols with examples (manual signs, pantomime, gestures, facial expressions), Introduction to sign languages: Finger spelling & basic vocabulary in American Sign Language, Indian Sign Language – basic vocabulary.

#### ✓ Record keeping

- ✚ Different records (administrative and clinical) to be maintained, Documentation of diagnostic, clinical & referral reports.

### ➤ Education for Children with Special Needs

- ✓ Introduction to education
- ✓ Education of children with special needs
- ✓ Educational problems faced by children with

- ✚ Hearing impairment
- ✚ Mental retardation
- ✚ Other communication disorders

- ✓ Approaches in teaching language to children with communication disorders
  - ✚ verbal approaches
    - natural and structured methods
    - unisensory and multisensory methods
  - ✚ non-verbal approaches
- ✓ Selection of appropriate communicational approaches for children with communication disorders
- ✓ Educational Programmes for Children with Communication Disorders.
  - ✚ Preparatory training
    - Parent-Infant Programme
    - Early Stimulation Programme
    - Mothers' Training Programme
    - Preschool Programme
  - ✚ Types of Educational Set-ups
    - Mainstreaming – inclusive and integrated education
    - Segregation: Special day classes, special day schools and special residential schools
  - ✚ Selection of appropriate educational set-ups for children with communication disorders
  - ✚ Measures to facilitate mainstreaming of children with communication disorders – like organising resource room facilities
  - ✚ Programmes and schemes for promoting mainstreaming of children with communication disorders – IEDC, DPEP, IEYCD
- ✓ Curricular Development / Adaptation & Instruction for Children with Communication Disorders
  - ✚ Identifying specific educational goals, and planning / implementing individualized educational programmes
  - ✚ Teaching curricular subjects (other than language) to children with communication disorders
  - ✚ Parental participation in the educational process through home training
- ✓ Preparation / Use of Teaching Aids and Language Workbooks
  - ✚ Teaching aids – Need, uses and types
  - ✚ Language workbooks – contents, uses and advantages
  - ✚ Linking language workbooks with other teaching aids
- ✓ Role of speech and hearing technicians in Education / Training in Children with Communication Disorders
  - ✚ Facilities for children with MR
  - ✚ Facilities for children with HI
  - ✚ Facilities for children with CP
  - ✚ Role in identifying and guiding them for appropriate vocations

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Secretary



# ANNEXURE "D"

## SYLLABUS

### ➤ GENERAL HUMAN BIOLOGY & DISEASES

#### ✓ **HUMAN BIOLOGY & DISEASE**

- a) **Infectious Diseases** : General account, causes and control, immunity and chemotherapy.
- b) **Diseases of man**  
(Definition of Disease, different type of pathogens such as bacteria, viruses and virus like organisms, fungi, helminths, protozoa), sources of Infections, Infection and contagious economic importance of diseases, methods of prevention and biology control.
- c) **Introduction** : Microscopic structure of tissues and organs of a human tissue-Connective tissues, epithelium, cartilage, bone, blood, muscular tissue and nervous tissue.
- d) Basic knowledge of Systems.
- e) **Organs** : Stomach, small intestine, liver pancreas lungs, spleen, kidney, skin, testis and ovary.
- f) Functional anatomy and physiology of the digestive system, Respiratory System, Circulatory System (with reference to immunity) Nervous System with special reference to transmission of the nerve impulse, sense organ, functions of muscles, Reproductive System, Endocrine System.
- g) Basic Pathology as applicable to above Systems.

#### ✓ **CELL BIOLOGY & GENETICS INTRODUCTION:**

Cell theory, cell as a unit of life. Tools and techniques of cell studies, Microscopy (Use of Microscope and Calibration), elements of microscopic techniques histo and cytochemistry, Electron microscope.

Elementary Knowledge of principles of X-ray diffraction. Instruments and diffraction pattern.

Molecular building in cellular system simple to complex macromolecules, structure and properties, Biomembrance-Transport mechanism, cellular respiration cell organelles structure and their functions. Enzymes, Vitamins and Hormones their functions chemical and physical structure, mode of action. Role of regulation of cellular activities.

Nucleus, Chromosomes, DNA structure including events in replication and Transcription, genetic code, translation and protein synthesis and details of meiosis, gene interaction, linkage and crossing over, mutation, elaboration of Mendel's laws of inheritance, elementary concepts of quantitative inheritance human genetics, sex linked inheritance, genetics and society.

### ➤ ANATOMY & PHYSIOLOGY OF EYE

#### ✓ **ANATOMY OF THE EYE**

- a. Muscles of Eye.
- b. Conjunctiva, cornea, sclera, iris.
- c. Ciliary body, choroid and retina.
- d. Lens, vitreous and optic nerve.
- e. Circulation of the Eye.
- f. Orbit its relations and vascular communication.
- g. Lacrimal & lid glands.
- h. Visual Pathway.
- i. Cranial Nerves II, III
- j. Cranial Nerves IV, V, VI & VII.
- k. Pituitary Gland and Cavernous Sinus.
- l. Parasympathetic, sympathetic nerves in relation to eye.

### ✓ **PHYSIOLOGY OF THE EYE**

- a. Eye lid, lacrimal gland and lid gland.
- b. Functions of the eye ball and its parts.
- c. Pupillary reflexes.
- d. Convergence and accommodation (Pathway)
- e. Convergence and accommodation (Theory & Mechanism)
- f. Visual Pathways and fields.
- g. Light sense, colour sense and night vision.
- h. Form sense, visual acuity and testing.
- i. Unilocular and binocular vision.
- j. Eye movements (conjugate and Disconjugate) and laws governing them.
- k. Visual cortex.
- l. Vision

## ➤ **PHYSICS, CHEMISTRY, PHARMACOLOGY & PATHOLOGY**

### ➤ **RELATED TO EYE**

#### ✓ **PHYSICS**

- a. **Measurements** : Concept of length and time, Conservation of some practical units. Equations of mechanicals quantity, area, volume, velocity, acceleration, momentum, force moment, energy and work (Their definition).
- b. **Wave Motion** : Simple Harmonic motion, waves and wave propagation, wave motion (including phase). Reflection, Dispersion, Polarization. Interference and diffraction etc.
- c. **Condensed State** : nature of liquids, surface tension, capillarity.
- d. **Electricity** : Moving charges, electric current, thermal effect. Joule's law, galvanometer, cyclotron (Basics) etc.
- e. **Electromagnetic Induction** : Lenz's law, Eddy currents, Faraday's laws of electro magnetic induction, elementary ideas of electro magnetic waves, rotating coil in a magnetic fields, alternating current, transformers, long distance transmission meters, phase relationship between voltage and current etc.

#### ✓ **CHEMISTRY**

- a. **Periodicity** : Periodic law and periodic table.

- b. Chemical handling and Molecular Shape :** Concept of orbital overlap in bond formation, hybridization and lone electron pair repulsion concept or resonance bond energy and bond length, properties of covalent compounds in relation to electronegativity. Shape of the simple molecules, coordinate bond formation with a few examples. Ionic bonds & definition, factors influencing the formation of ionic bond, general properties of ionic compounds, metallic bond, an explanation for properties of metals. Hydrogen bonding etc.
- c. State of Matter :** Discuss in terms of order and kinetic energy, properties of gas, liquids & elementary introduction to solid state.
- d. Energetics, Energy Changes Chemical Reactions :** Exothermic and Endothermic reactions, solutions, fusions, vaporization and sublimation, Hess's Law, Calor values of food and fuels.
- e. Chemical Equilibrium :** Law of mass action and its application to chemical equilibrium, Le Chatelier Braun principle, factors, Ionic equilibrium aqueous solution products, common ion effect. Modern concept of acid and acid base equilibrium, hydrolysis of salt, buffer solution etc.
- f. Electro-Chemistry (Basic) :** Electrolysis, Faraday's and calculation based on them. Application of electrolysis to electroplating and electrochemical preparation, Electrolytic conduction.
- g. General Treatment of a block elements :** General trends of properties of the elements boron family, important minerals of boron, borax and orthoboric acid test, boron nitrates and boron hydrides (only an elementary idea to show as an electron deficient molecule). Aluminium Its minerals, extraction, properties and uses. Some important compounds like alumina, aluminium and alums and alloys. (Especially boron, boron group, including alums, carbon and nitrogen family).
- h. The Carbon Family :** General trends in properties, important mineral of tin and lead, various compounds, alloys of tin and lead.
- i. The Nitrogen Family :** General trends in properties of the family, important mine of phosphorus, ammonia, its manufacture, oxide and oxy-acids of nitrogen and phosphorus. Uses of metaphosphate, super phosphates and chemical fertilizers.
- j. Organic chemistry as chemistry of carbon compounds hydrocarbons, simplest organic compounds types of hydrocarbons, homologous series.**
  - a. Physical properties to be based on nature of bonding. Size and nature of the carbon chain and the general non-planar character.
  - b. Chemical Properties : Combustion and controlled oxidation : Free halogenations and cracking in alkanes, Catalytic hydrogenation and electrophilic addition in alkenes and alkynes. Markownikoff's rule.
  - c. Some simple transformations in benzene and aliphatic compounds
  - d. Sources of hydrocarbons : Petroleum and coal for treatment from industrial point of view.
- k. Galvanic Cells and cell potential E, electrochemical series.**

## ✓ PHARMACOLOGY.

1. Basic Pharmacology, Pharmacy Etc.
2. Antiseptics.
3. Local anaesthetics, analgesics
4. Anti-glaucoma drugs.
5. Sedative and tranquilizers
6. Diuretics and Laxatives.
7. Antipyretics
8. Steroids
9. Chemotherapy agents including antibiotic.

## ✓ **PATHOLOGY TELATED TO EYE**

- a. Common eye Diseases.
- b. Diseases of Eye lids.
- c. Diseases of Orbit.
- d. Diseases of Adenexa.
- e. Diseases of Cornea.
- f. Diseases of conjunctiva
- g. Diseases of Lens.
- h. Injuries of the Eye.

## ➤ **OPTICS INCLUDING MECHANICAL OPTICS**

### ✓ **OPTICS**

- Huygens construction (geometrical ). Young's double slit experiments (idia of path difference). Loyd's Morror, colour of the films (qualitative), single slit, diffraction, applications of lesser beams, spectrometer, production of different types of spectraline, continuous and absorption.
  - a. Nomenciature of prisins and their uses.
  - b. Ophthalmic glass and physical for of lenses of ophthalmic lenses.
  - c. Transmission density and opacity of a refracting glass and glass coating
  - d. Cylindrical lenses, stum's coniod.
  - e. Lens combination.
  - f. Aberration of lenses.
  - g. Principle of fabricating various types of special lenses.
  - h. Ophthalmic plastic lens.
  - i. Refractive media of eye and principles of visual imagery.
  - j. Corneal system and lenticular system.
  - k. Reduced eye and images formation including gauss theorem.
  - l. Aberration of Eye.
  - m. Principles, mathematical deviation and utility of Punkinie images.
  - n. Pachometer.
  - o. Keralometer.
  - p. Accomodation and convergence.
  - q. Optical defects in genesis of refractive arrears (Presbyopia, Aphakia and principles of their treatment with lens).
  - r. Instruments concerning opthatmic glass testing.
  - s. Physiological basis of visual acuity and retinal images sizes.
  - t. Human eye and spectacles.
  - u. Effects of lens of the retinal image.
  - v. Field of view and magnification.
  - w. Refractive errors.
  - x. Retinoscopy & its principles.
  - y. Surface reflection.

## ✓ **MECHANICAL OPTICS**

- a. Power of lens.
- b. Transposition of spectacle lenses, shapes and sizes.
- c. Grinding Machines
- d. Grinding Materials.
- e. Tools and gauge and their testing.
- f. Spherical lenses.
- g. Cylindrical lenses.
- h. Bifocals and Multifocals.
- i. Ophthalmic peisms.
- j. Prism effect.
- k. Oblique cylinders.
- l. Protective lenses.
- m. Plastic lenses.
- n. Special lenses-Miscellaneous lenses & appliances.
- o. Speciality lenses:

## ➤ **MAINTANCE OF EQUIPMENT & INSTRUMENTS, ROUTINE& SPECIAL EYE INVESTIGATIONS & RELATED SURGICAL PROCEDURES**

### ✓ **MAINTENANCE OF EQUIPMNETS & INSTRUMENTS**

- Understanding of ophthalmic equipments.
- Optical equipments: Ophthalmoscope, slit lamps keratomcters Torches etc.
- Maintenance of Surgical Instruments.
- Diathermy machine.
- Microscope (laboratory) 7 eye bank equipments.
- Perimeter.
- Trial sets.
- Orthoptic equipments.

### ✓ **ROUTINE OPHTHALMIC INVESTIGATION**

- Conjunctival Swab & smear taking for cytology & culture.
- Syringing and lacrimal function test.
- Tension taking.
- Colour vision.
- Visual fields.
- Various instruments, their principles.
- Dark adaptometry.
- Keratometry.

- Pachometry.
- Anaesthesiometry.
- PH. Testing.
- Othocalor.
- Refractionometer.
- Measurement of spectacle lense, power of focimeter.
- Fluorescein staining and techniques.

## ✓ **SPECIAL OPHTHALMIC INVESTIGATIONS**

- E.R.G.
- E.C.G.
- Electro oculomyography.
- Ultrasonography.
- Tomography.
- Burnnan's Locater.
- Fluorescse in Angiography.
- Oculo- Nystagmography
- Ocular Photography anterior segment.
- Gonioscopy and 3 mirror C.L Examination.

## ✓ **ORTHOPTICS, PLEOPTICS AND MUSCULAR IMBLANCE**

- a. Normal Binocular function.
  - b. Grades of binocular vision.
  - c. Fusion and stabismus stereopis (SMP).
  - d. Etiology of strabismus.
    - Surgery.
    - Motor.
    - Central.
- **Methods of examination of strabismus.**
    - History.
    - Visual acuity.
    - Cover test.
  - **Ocular Movement and their testing.**
    - Measurement of angle of squint
    - Testing of Binocular functions
    - Reterophoiria
      - Classification
      - Clinical picture
      - Investigations
  - **Esophoria**
    - Classification, Investigations.
    - Treatment
  - **Pheria (Cent.)**
    - Hyperphoria
    - Cyclophoria & Hyphoria
  - **Abnormalities of Monocular Vision**

- Diplopia
- Confusion Suppression
- **Abnormal Retinal Correspondance**
  - Definition
  - Aetiology
  - Classification

**Methods of detection of A.R.C. with their relatives importance of A.R.C. (Conti.)**

- Prognosis
- Classification
- Investigations
- A.C./A. Ration
- Its importance
- Methods of testing

**Concomitant Squint (accommodative)**

- **Aetiopathogenesis**
  - Classification
  - Special investigations
- **Treatemt of Accommodative Squint**
  - Optical
  - Orthoptics
  - Miotics
    - Surgery
- **Subject**
  - Non – Accomodative Squint
  - Classification
  - Investigations
  - Treatment
- **Divergent Squint**
  - Classification
  - Investigations
- **Vertical Squint**
  - Aetiology
  - Classification
  - Investigations
- **Primary Vertical**
- **Secondary Vertical**
  - a. Differential Diagnosis of Primary and secondary
- **Alternating Circumducdtion**
  - Aetiology
  - Classification
  - Clinical Picture
  - Investigation & Management
- **Torsional Squints**
  - Cyclotopia
  - Aetiology

- Classification
  - Clinical Picture & Management
- **Suppression**
  - Defection& treatment
- **Amolyopia**
  - Definition
  - Aetiology
  - Development
  - Classification
  - Detection
  - Management with occasional therapy after images
  - Definition
  - Description
  - Usage of after images in the treatment of Amoblyopia and pleoptic therapy
  - Haldinger brushes
  - Bangerter methos of pleoptic therapy
  - Indication of Orthoptic and surgical treatment
  - Latent strabismus
  - Manifest Stabisumus
  - Post-operative Othoptic Management.

#### ✓ **INTRODUCTION TO TECHNIQUES AND PREPARATION OF THE PATIENT**

- Asepris-How to achieve?
- Anaesthetic agents and where indicated.
- Pre-operative Instructions.
- Cauterisation of Ulcers.
- Spilation and Electrolysis.
- Bandging of Eye.
- Syringing.
- Scraping.
- Taking samples for conjunctival and culture examinations.

#### ➤ **NUTRITION, INDUSTRIAL INCLUDING HILOLOGY, STATISTICS & COMMUNITY WELFAARE**

##### ✓ **Indusstrial Hazards & Their Protection Hilology, Statistics & Nutrition**

- a. Concept, Importance, classification food, dietary requirements ( in context with eye, ) balanced Dieet, Community Nutrition, Nutritional education : definition, scope, principles ect.
- b. Nutrition and Eye Diseases.
- c. Introduction, Concurrence, methods of cultivation of important crop plants and related diseases.

##### ✓ **STATISTICS AND CLAULUS**

##### a. **Statistics & Probability**

- Population and sample
- Measures of central lendency and dispersion.
- Point and interval estimation ( of mean only)

- Scatter diagrams and a Pearson Correlation co-efficient) probability:
- Random experiments and sample space. Events.
- Probability on a sample.
- Conditional probability, multiplication theorem.
- Independent events.
- Random variables (discrete), Binomial and Poisson probability distribution
- Expected value (Mean) and variance. Calculations for probability distribution.
- Normal distribution.

**Fundamental principles and basic knowledge.**

✓ **VISIONAIDS, CONTACT LENS & PROTECTIVE GLASSES**

- Contact lens basic concepts.
  - Lens designing.
  - Manufacturing principles and low vision aid.
  - Causes of visual impairment and blindness.
  - Classification of low vision aids and special optical features of groups and child mode action.
  - Introduction to visual prosthesis.
  - Visual requirement in industries.
  - Illuminations.
  - Prevention of industrial injury and special services to aid this.
  - First Aid to eye injury.
- **Entrepreneurship:** Introduction to entrepreneurship meaning, importance and persons qualities needed, scope, employment opportunities, Introduction to small business, production Marketing, managerial and financial, selection of business and preparation of Project Report. Financing Agencies, Financial facilities how and where to get procedural details in starting a new industry, investment, decision, market study, production, planning and scheduling budgeting, man power planning.

✓ **COMMUNITY WELFARE**

- Eye Screening Programmes, (with special emphasis on National Blindness Control Programme), School Clinics and Surveys.
- Functioning of Mobile Eye Health Units including eye camps and practical participation in the same.
- Determination of refractive errors and prescription of glasses.
- Blind and its problems and rehabilitation for the blind.
- Health Education in the field of eye care.
- Medical Secretarial Assistance.
- Appointments.
- Drafting and correspondence.
- Records Maintenance
- Coping.

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# ANNEXURE "E"

## SYLLABUS

### ➤ BASIC ANATOMY

#### ✓ THEORY

#### **Introduction to Anatomy**

#### **Basic Anatomical terminology**

##### ✓ **Osteology-**

- Upper limb – clavicle,
- scapula, humerus,
- radius,
- ulna
- Lower limb - femur,
- hipbone,
- sacrum,
- tibia,
- fibula
- Vertebral column

##### ✓ **Thorax –**

- Intercostal space,
- pleura,
- bony thoracic cage,
- ribs sternum & thoracic vertebrae

##### ✓ **Lungs –**

- Trachea,
- bronchial tree

##### ✓ **Heart –**

- Surface anatomy of heart,
- chambers of the heart,
- valves of the heart,
- major blood vessels of heart,
- pericardium,
- coronary arteries.

##### ✓ **Skeleto-muscular system –**

- Muscles of thorax,
- muscles of upper limb (arm & fore arm) Flexor and extensor group of muscles (origin, insertion, action)

✓ **Excretory system –**

- Kidneys,
- ureters,
- bladder

## PRACTICALS

- ✓ **Osteology** – Bones identification (right and left side) and prominent features and muscle attachment of the bone, clavicle, scapula, radius, ulna, humerus, femur, hip bone, sacrum, tibia, fibula.

## ➤ PHYSIOLOGY

### 1) The Cell:

- Cell Structure and functions of the various organelles.
- Acid base balance and disturbances of acid base balances (Alkalosis, Acidosis)

### 2) The Blood:

- Composition of Blood, functions of the blood and plasma proteins, classification and protein.
- Pathological and Physiological variation of the RBC.
- Function of Hemoglobin
- Erythrocyte Sedimentation Rate.
- Detailed description about WBC-Total count (TC), Differential count (DC) and functions.
- Platelets – formation and normal level and functions
- Blood groups and Rh factor

### 3) Cardio-Vascular System:

- Physiology of the heart
- Heart sounds
- Cardiac cycle, Cardiac output.
- Auscultatory areas.
- Arterial pressures, blood pressure
- Hypertension
- Electro cardiogram (ECG)

### 4. Respiratory system:

- Respiratory movements.
- Definitions and Normal values of Lung volumes and Lung capacities.

### 5. Excretory system:

- Normal Urinary output
- Micturition
- Renal function tests, renal disorders.

### 6. Reproductive system:

- Formation of semen and spermatogenesis.
- Brief account of menstrual cycle.

#### 7. Central Nervous system:

- Functions of CSF.

#### 8. Endocrine system:

- Functions of the pituitary, thyroid, parathyroid, adrenal and pancreatic Hormones.

#### 9. Digestive system (for the students of Diploma in Scope Support Technology)

- Physiological Anatomy of the GIT.
- Food Digestion in the mouth, stomach, intestine
- Absorption of foods
- Role of bile in the digestion.

### PRACTICALS

- Determination of Blood Groups.
- Measurement of human blood pressure.
- Examination of Respiratory system to count respiratory rate and measure inspiration and respiration

### ➤ BIO-CHEMISTRY

#### ✓ Carbohydrates

- Glucose and Glycogen Metabolism

#### ✓ Proteins:

- Classification of proteins and functions

#### ✓ Lipids:

- Classification of lipids and functions

#### ✓ Vitamins & Minerals:

Fat soluble vitamins(A,D,E,K) – Water soluble vitamins – B-complex vitamins- principal elements(Calcium, Phosphorus, Magnesium, Sodium, Potassium, Chlorine and sulphur)- Trace elements – Calorific value of foods – Basal metabolic rate(BMR) – respiratory quotient(RQ) Specific dynamic action(SDA) – Balanced diet – Marasmus – Kwashiorkor

### BIOCHEMISTRY PRACTICALS

- Benedict's test
- Heat coagulation tests

### ➤ PATHOLOGY

- Cellular adaptation, Cell injury & cell death.
- Introduction to pathology.
- Overview: Cellular response to stress and noxious stimuli.
- Cellular adaptations of growth and differentiation.
- Overview of cell injury and cell death.
- Causes of cell injury.
- Mechanisms of cell injury.
- Reversible and irreversible cell injury.

- Examples of cell injury and necrosis

✓ **Inflammation.**

- General features of inflammation
- Historical highlights
- Acute inflammation
- Chemical mediators of inflammation
- Outcomes of acute inflammation
- Morphologic patterns of acute inflammation
- Summary of acute inflammation
- Chronic inflammation

✓ **Immunity disorders.**

- General features of the immune system
- Disorders of the immune system

✓ **Infectious diseases.**

✓ **Neoplasia. Definitions Nomenclature**

- General principles of microbial pathogenesis
- Viral infections
- Bacterial infections-Rheumatic heart disease.
- Fungal infections
- Parasitic infections
- Biology of tumor growth benign and malignant neoplasms Epidemiology
- Carcinogenic agents and their cellular interactions Clinical features of tumors

## ➤ **BASICS OF COMPUTER**

✓ **COURSE CONTENT:**

Introduction to computer – I/O devices – memories – RAM and ROM – Different kinds of ROM – kilobytes. MB, GB their conversions – large computer –Medium, Micro, Mini computers – Different computer languages . Typing text in MS word Manipulating text – Formatting the text – using different font sizes, bold, italics – Bullets and numbering – Pictures, file insertion – Aligning the text and justify – choosing paper size – adjusting margins – Header and footer, inserting page No's in a document – Printing a file with options – Using spell check and grammar – Find and replace – Mail merge – inserting tables in a document. Introduction to Internet – Using search engine – Google search – Exploring the next using Internet Explorer and Navigator – Uploading and Download of files and images – E-mail ID creation – Sending messages – Attaching files in E-mail – Introduction to “C” language – Different variables, declaration, usage – writing small programs using functions and sub – functions.

1. Applied Anatomy and Physiology
2. Clinical Pharmacology
3. Clinical microbiology
4. Medical Ethics.

5. Medicine outline
6. Principles of Anaesthesia
7. Basic Anaesthetic techniques

## ➤ APPLIED ANATOMY AND PHYSIOLOGY RELATED TO ANAESTHESIA

### RESPIRATORY SYSTEM

#### ✓ A Structure and function of the respiratory tract in relation to respiratory system

Nose	-	Role in humidification
Pharynx	-	Obstruction in airways
Larynx	-	Movement of vocal cords, cord palsies.
		Trachea & Bronchial tree – vessels, nerve supply, respiratory tract, reflexes, bronchospasm
Alveoli	-	Layers, Surfactants.

#### ✓ B. Respiratory Physiology

##### ○ Control of breathing

- Respiratory muscles - diaphragm, intercostals
- Lung volumes - dead space, vital capacity, FRC etc.
- Pleural cavity - intrapleural pressure, pneumothorax.
- Work of breathing - airway resistance, compliance
- Respiratory movements under anaesthesia.
- Tracheal tug - signs, hiccup

#### ✓ C. Pulmonary Gas Exchange And Acid Base Status

- Pulmonary circulation
- Pulmonary oedema,
- Pulmonary hypertension
- Pulmonary function tests.
- Transfer of gases - oxygen & Carbon dioxide
- Acid base status, definitions, acidosis types, Alkalosis types, buffers in the body.

#### ✓ D. Oxygen: properties, storage, supply, hypoxia

#### ✓ E. Respiratory failure, type, clinical features, causes.

## ➤ CARDIOVASCULAR SYSTEM

### • Anatomy –

- Chambers of the heart, major vasculature.
- Coronary supply, innervation.
- Conduction system.
- Cardiac output - determinants, heart rate, preload, after load.
- Coronary blood flow & myocardial oxygen supply

- **ECG**
  - Arrhythmias cardiovascular response to
  - Anaesthetic & surgical procedures.
  - Hypotension - causes, effects, management.
  - Cardio pulmonary resuscitation.
  - Myocardial infarction, hypertension.

- **FLUIDS AND ELECTROLYTES**
  - Body Fluids - Composition
  - Water, sodium and potassium balance
  - Fluids - composition & administration
  - Cannulation.

- **BLOOD TRANSFUSION**
  - Blood grouping, storage, administration

## ➤ **Clinical Pharmacology**

### ✓ **ANTISIALAGOGUES**

- Atropine,
- Glycopyrrolate

### ✓ **SEDATIVES / ANXIOLYTICS**

- Diazepam,
- Midazolam,
- Phenergan,
- Lorazepam,
- Chlorpromazine,
- Trichlopho

### ✓ **NARCOTICS**

- Morphine, Pethidine, Fentanyl, Pentazocine

### ✓ **ANTIEMETICS**

- Metoclopramide, Ondansetron, Dexamethasone

### ✓ **ANTACIDS**

- Na citrate, Gelusil, Mucaine gel.
- H<sub>2</sub> BLOCKERS
- Cimetidine, Ranitidine, Famotidine

### ✓ **INDUCTION AGENT**

- Thiopentone, Diazepam, Midazolam, Ketamine, Propofol, Etomidate.
- **MUSCLE RELAXANTS**
- Depolarising - Suxamethonium,
- Non depolarising - Pancuronium, Vecuronium, Atracurium, rocuranium

### ✓ **INHALATIONAL GASES**

- Gases - O<sub>2</sub>, N<sub>2</sub>O, Air
- Agents - Ether-, Halothane, Isoflurane, Sevoflurane, Desflurane
- **REVERSAL AGENTS**
- Neostigmine, Glycopyrrolate, Atropine,
- Nalorphine, Naloxone, Flumazenil (Diazepam)

### ✓ **LOCAL ANAESTHETICS**

- Xylocaine, Preparation, Local – Bupivacaine - Topical, Prilocaine-jelly, Emla - Ointment, Etidocaine. Ropivacaine

✓ **. EMERGENCY DRUGS**

- Adrenaline : Mode or administration, dilution, dosage,
- Effects, Isoprenaline
- Atropine, bicarbonate, calcium, ephedrine, xylocard,
- Ionotropes : dopamine, dobutamine, amidaron
- Aminophylline, hydrocortisone, antihistamines, potassium.
- Cardiovascular drugs
- Antihypertensives
- Antiarrhythmics
- Beta - Blockers
- Ca - Channel blockers.

✓ **MEDICAL ETHICS**

- Medical ethics - Definition - Goal - Scope
- Code of conduct - Introduction –
- Basic principles of medical ethics – Confidentiality
- Malpractice and negligence - Rational and irrational drug therapy

✓ **MEDICINE OUTLINES**

- Disorder of haemopoiesis - Anaemias - iron deficiency anaemia,
- Infectious diseases - Sepsis and septic shock, fever of unknown origin, infective endocarditis, infective of skin, muscle, soft tissue, infection control in hospital, diseases caused by bacteria, viruses, mycobacterium, fungi and protozoa and helminthes, common secondary infection in HIV.
- Diseases of CVS - congenital RHD - Rheumatic fever, CAD, Peripheral vascular diseases.
- Respiratory system - asthma pneumonia
- Kidney & Urinary tract - acute renal failure, Glomerulonephritis, Haemodialysis, Transplant, Urinary tract infection
- Liver and biliary tract disease - Viral hepatitis, alcoholism
- Endocrinology and metabolism - Diabetes mellitus, Hyper - and hypothyroidism

➤ **CSSD Procedures**

1. Waste disposal collection of used items from user area, reception protective clothing and disinfection safeguards,
2. use of disinfectants sorting and classification of equipment for cleaning purposes, sharps, blunt lighted etc. contaminated high risk baby care - delicate instruments or hot care instruments,
3. cleaning process - use of detergents. Mechanical cleaning apparatus, cleaning instruments, cleaning jars, receivers bowls etc. trays, basins and similar hand ware utensils. Cleaning of catheters and tubings, cleaning glass ware, cleaning syringes and needles.
4. Materials used for wrapping and packing assembling pack contents. Types of packs prepared. Inclusion of trays and gilliparts in packs. Method of wrapping and making use of indications to show that a pack of container has been through a sterilization process date stamping.
5. General observations principles of sterilization. Moist heat sterilization. Dry heat sterilization. EO gas sterilization. H2O2 gas plasma vapo sterilization.

## ➤ **PRINCIPLES OF ANAESTHESIA**

### ○ **MEDICAL GAS SUPPLY**

- Compressed gas cylinders
- Colour coding
- Cylinder valves; pin index.
- Gas piping system
- Recommendations for piping system
- Alarms & safety devices.

### ✓ **ANAESTHESIA MACHINE**

- Hanger and yoke system
- Cylinder pressure gauge
- Pressure regulator
- Flow meter assembly
- Vapourizers - types, hazards, maintenance, filling and draining, etc.

### ✓ **BREATHING SYSTEM**

- General considerations: humidity & heat
- Common components - connectors, adaptors, reservoir bags.
- Capnography ; etcO<sub>2</sub>
- Pulse oximetry
- Methods of humidification.
- Classification of breathing system
- Mapleson system - a b c d e f
- Jackson Rees system, Bain circuit
- Non rebreathing valves - ambu valves
- The circle system
- Components
- Soda lime, indicators

### ✓ **FACE MASKS & AIRWAY LARYNGOSCOPES**

- Types, sizes
- Endotracheal tubes - Types, sizes.
- Cuff system
- Fixing, removing and inflating cuff, checking tube position complications.

### ✓ **ANAESTHESIA VENTILATOR AND WORKING PRINCIPLES.**

### ✓ **MONITORING**

- ECG
- SpO<sub>2</sub>
- Temperature
- IBP
- CVP

## ➤ **BASIC ANAESTHETIC TECHNIQUES**

### ✓ **HISTORY OF ANAESTHESIA**

### ✓ **First successful clinical demonstration:**

- Pre - historic ( ether) era
- Inhalational anaesthetic era
- Regional anaesthetic era
- Intravenous anaesthetic era

- Modern anaesthetic era
- Minimum standard of anaesthesia
- Who should give anaesthesia?

✓ **PRE-OP PREPARATION:**

- Pre anaesthetic assessment~ History – , past history - disease / Surgery / and personal history - Smoking / alcohol

✓ **General physical assessment, systemic examination – CVS, RS, CNS**

**INVESTIGATIONS**

✓ **Routine - Haematological - their significance**

- Urine
- E.C.G.
- Chest X - ray

✓ **Special -Endocrine, hormonal assays**

- Echocardiography
- Angiography
- Liver function test
- Renal function test
- Others

✓ **PRE - ANAESTHETIC ORDERS:**

✓ **Patient - Informed consent**

- NPO
- Premedication - advantages, drugs used
- Special instructions - if any

**Machine**

- Checking the machine
- O2, N2O, suction apparatus
- Laryngoscopes, et tubes, airways
- Things for IV accessibility
- Other monitoring systems

**INTRAOPERATIVE MANAGEMENT**

- Confirm the identification of the patient
- Monitoring - minimum
- Noninvasive & Invasive monitoring
- Induction - drugs used
- Endotracheal intubation
- Maintenance of anaesthesia
- Positioning of the patient
- Blood / fluid & electrolyte balance

- Reversal from anaesthesia - drugs used
- Transferring the patient
- Recovery room – set up and things needed

## ➤ **REGIONAL ANESTHETIC TECHNIQUES.**

- Local Anaesthetic Technique
- Nerve Blocks
- Spinal Anesthesia
- Epidural Anaesthesia

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# ANNEXURE "F"

## SYLLABUS

### ➤ Anatomy and Physiology

- ✓ Elementary Physics and Chemistry
- ✓ Characteristic of living matter
- ✓ The structure of living matter
- ✓ The Tissues
- ✓ Systems and various parts of human body
- ✓ Development and types of Bones
- ✓ Bones of head & trunk
- ✓ Bones of the limb
- ✓ Joints or Articulations
- ✓ Structure and action of Muscles.
- ✓ The Chief Muscles of the Body
- ✓ The Blood
- ✓ The heart and Blood Vessels
- ✓ The Circulation System
- ✓ The Lymphatic System
- ✓ The Respiratory System
- ✓ The Digestive System
- ✓ The Liver, Billiary System and Pancreas
- ✓ Nutrition and Metabolism
- ✓ Endocrine Glands and Exocrine Glands
- ✓ The Urinary System
- ✓ The Nervous System
- ✓ The Ear
- ✓ The Eye
- ✓ The Skin
- ✓ The Reproductive System etc.

### Surgical Instruments and Surgical Procedures

#### ○ **Pre – Operative Consideration**

- Psychological support of the surgical patient.

#### ✓ **Protection of the Patient in Surgery**

- Admission Procedure
- Transfer Procedure Position
- Environmental Controls
- Electro-Surgery
- Operative Records

- Counting Procedure
- Sterilization
- Emergencies and Disasters.

#### ○ **Surgical Instruments**

- Instruments for General Surgery
- Operation of the face and neck
- Operations of the Nose, Throat and : Accessory Nasal Sinuses
- Ophthalmic surgery
- Sinuses, Ear & throat
  - Operations of the Chest, Operations on the Genito-Urinary Tract
  - Gynecological and Obstetric Operations
  - Orthopedic Operations
  - Neuro-surgical Operations
- Radium Insertion
  - Traumatic Surgery

#### ✓ **Surgical Procedures**

##### ✓ **Neck Surgery**

- Thyroidectomy
- Parathyroidectomy
- Thyroglossal Cystectomy

##### ✓ **Preast Procedures**

- Breast Biopsy
- Mastectomy

##### ✓ **Abdominal Extraintestinal Surgery**

- Abdominal laprotomy
- Abdominal Herniography
- Cholecystectomy
- Drainage of Pancreatic Cyst (Pseudocyst)
- Pancreaticoduodenectomy (Whipples procedure)
- Pancreatectomy
- Drainage of Abscess (es) in the region of liver
- Hepatic Resection
- Splenectomy.

#### ➤ **Gastrointestinal Surgery**

- Esophagoscopy
- Gastroscopy
- Colonoscopy
- Sigmoidoscopy

- Vagotomy and Pyloroplasty
- Gastrostomy
- Gastrectomy
- Small Bowel Resection
- Cutaneous illeostomy
- Appendectomy
- Colostomy
- Closure of colostomy
- Right Hemicolectomy
- Transverse Colectomy
- Anterior Resection of the Sigmoid Colon and Rectum
- Haemorrhoidectomy
- Pilonidal Cystectomy and Sinusotomy
- Theirsch Procedure
- Ripstein Procedure (Prosacral Rectopexy)

### ✓ **Gynaecologic and Obstetric Surgery**

- Dilatation of the Cervix and Curettage of the Uterus (D&C)
- Conization of the Uterine Cervix
- Therapeutic Abortion by suction Curettage
- Marsupialization of Bartholin's Duct Cyst
- Abdominal Ligabion (Different Procedures)
- Culdoscopy
- Anterior and /or Posterior Colporraphy
- Laparoscopy
- Total Abdominal Hysterectomy
- Slpingo-Oophorectomy
- Tuboplasty of the Fallopian Tubes
- Pelvic Exenteration
- Caesarian Section.

### ✓ **Genitourinary Surgery**

- Hypospadias repair
- Epispadias repair
- Penile Implant
- Marshall-Marchetti-Krantz Procedure
- Hydrocolectomy
- Vasectomy
- Vasovasostomy
- Cutaneous Vasostomy
- Spermatoclectomy
- Orchiectomy
- Gystoscopy
- Cystoscopy
- Transurethral Resection of the Prostate
- (TURP) and /or Lesions of the Bladder or Bladder Neck (TURB)

- Open Prostatectomy
- Nephrectomy
- Upper Tract Urolithotomy(Ureterolithotomy, Phelolithotomy, Nephrolithotomy) cutaneous vesterstomy
- Llegal conduit
- Extracproeal shock wave Lithotrpsy (ESWL)
- Ultrasonic Lithotripsy
- Electrohydraulic Lithotripsy

### ✓ **Thoracic Procedures**

- Bronchoscopy
- Mediastioscopy
- Segmental Resection of the Lung
- Wedge Resection of the Lung
- Pulmonary Lobectomy
- Pneumonectomy
- Decortication of the Lung
- Insertion of Transvenous Endocardial Pacemaker
- Correction of Pectus
- Excavatum
- Thymectomy

### ✓ **Cardiovascular Surgery**

- Carotid Endarterectomy
- Abdominal Aortic Procedures(Abdominal Aortic Aneurysmectomy, Abdominal Aortic Endarterectomy) with Aortobifemoral Graft
- Femoropopliteal Bypass
- Greater Saphenous vein Ligation and Stripping
- Portacaval Shunt
- Arteriovenous Shunt
- Arteriovenous Fistula
- Cardiac procedures
- Bypass Surgery(Different Procedures)

### ✓ **Orthopaedic Surgery**

- Open reduction of a carpal Bone Fracture
- Excision of a Ganglion
- Carpal tunnel Release
- Open reduction of the Humerus
- Open reduction of the Radius and/or Ulna
- Open reduction of an Olecranon process Fracture
- Repair of recurrent Anterior Dislocation of the Shoulder
- Open reduction of Fracture of the Humeral Head (including Humeral Head Prosthesis)
- Internal Fixation of the Hip
- Femoral head Prosthetic Replacement
- Total Hip replacement
- Open reduction of the femoral Shaft
- Triple Arthrodesis of the Ankle
- Total Ankle joint Replacement

- Open reduction of ankle
- Arthrotomy of the Knee
- Excision of Popliteal(Baker's Cyst)
- Total knee replacement
- Open reduction of the Tibial shaft
- Bunionectomy
- Correction of hammer toe Deformity with interphalangeal Fusion
- Metatarsal Head Resection
- Procedure for correction of scoliosis
- Amputation of lower Extremity

### ✓ **Neurological Surgery**

- Craniotomy
- Cranioplasty
- Transphenoidal Hypophysectomy
- Ventricular Shunts
- Laminectomy
- Excision of a Cervical Intervertebral Disc with fusion, Anterior Approach.

### ✓ **Plastic Surgery**

- Cleft Lip repair
- Cleft Palate repair
- Reduction of Nasal Fracture
- Reduction of Mandibular Fracture
- Reduction of a Zygomatic Fracture
- Open reduction of an Orbital Floor Fracture
- Rhinoplasty
- Mentoplasty Augmentation
- Blepharoplasty
- Rhytidectomy
- Dermabrasion
- Otoplasty
- Repair of Syndactyly
- Digital Flexor Tendon repair
- Peripheral Nerve repair
- Palmar Fasciectomy
- Reduction Mammoplasty
- Abdominoplasty / Abdominal Liposuction
- Liposuction

### ✓ **Otorhinolaryngologic (ENT) Surgery**

- Myringotomy
- Mastoidectomy
- Tympanoplasty
- Stapedectomy
- Submucous Resection of the Nasal Septum(SMR) / Septoplasty
- Intranasal Antrostomy / Intranasal Fenestration of the Nasoantral Wall.
- Caldwell-Luo procedure(Radial Drainage of the antrum of the Maxillary Sinuses)
- Nasal Polypectomy

- Drainage of the Frontal Sinus
- Tonsillectomy and Adenoidectomy (T and A)
- Laryngoscopy
- Traheostomy
- Excision of the Submaxillary (Submandibular Gland)
- Parotidectomy
- Laryngectomy
- Radial Neck Dissection
- Excision of lesions of the oral cavity
- (Partial Glossectomy with Marginal Resection of the Mandible)

### ✓ **Ophthalmic Surgery**

- General Information
- Excision of a Chalazion
- Canthotomy
- Correction of Ectropion
- Blepharoptosis repair
- Lacrimal Duct Probing
- Dacryocystostomy
- Correction of Strabismus
- Enucleation of the Globe
- Orbital Exenteration
- Corneal Transplant /Keratoplasty
- Cataract Extraction
- Iridectomy
- Trabeculectomy
- Excision of a pterygium
- Repair of Retinal Detachment /Scleral Bucking
- Vitrectomy
- Refractive keratoplasty

### ✓ **Pediatric Procedures**

- Pediatric General Information
- Pediatric Tracheostomy
- Branchial sinusectomy
- Repair of Congenital Diaphragmatic Hernia
- Omphalocele Repair
- Pediatric Umbilical Herniography
- Repair of congenital Atresia of the Esophagus
- Insertion of a central Venous Catheter(Pediatric)
- Pyloromyotomy for congenital Hypertrophic Pyloric Stenosis
- Pediatric Gastrostomy
- Reduction of pediatric intussusception
- Pediatric Colostomy
- Pediatric Colorectal Resection for Aganglionic Megacolon/Hirschsprung's Disease
- Repair of Imperforate Anus

# ANAESTHESIA

## Anaesthesia :

- General Information
- General Anaesthesia
- Conduction
- ✓ **General Anaesthesia :**
- ✓ **Conduction Anaesthesia:**
  - Spinal
  - Epidural
  - Caudal
  - Regional
  - Local
  - Topical

- ✓ **Methods for Preparation of the Patients for Anaesthesia**
  - Methods and Procedures (during after operation)

## ➤ Surgical Procedures and Monitoring:

### ✓ **Safety for operation room personnel**

- In Service education
- Body mechanic
- Fatigue Factors
- Radiation Safety
- Infection control
- Chemical Hazards

### ✓ **Preparation of Instruments Tray**

- Major procedures tray
- Basic /Minor procedures tray
- Limited procedures tray
- Thyroid tray
- Long instruments tray
- Biliary tract procedures tray
- Cholelithotomy tray
- Basic rigid sigmoidoscopy tray
- Gastrointestinal procedures tray
- Rectal procedures tray

### ✓ **Gynaecologic and Obstetric Trays**

- Dilatation of the Cervix and Curettage of the Uterus (D&C) Tray
- Cervical Cone Tray
- Laparoscopy
- Abdominal Hysterectomy
- Caesarian Section tray

- Vaginal Hysterectomy tray

### ✓ **Genitourinary Trays :**

- Vasectomy tray
- Open Prostatectomy
- Kidney tray

### ✓ **Thoracic Trays :**

- Mediastinoscopy tray
- Thoractomy Tray
- Pacemaker tray
- ✓ **Cardiovascular Trays :-**

- Vascular Procedures tray
- Vascular Shunt Tray
- Cardiac procedures tray

### ✓ **Orthopaedic Trays :-**

- Basic orthopaedi procedures tray
- Minor orthopaedic procedures tray
- Bone holding instruments tray
- Hip retractor tray
- Knee Arthotomy tray
- Knee or Ankle Arthroscopy tray

### ✓ **Neurologic Procedures Tray :**

- Craniotomy tray
- Laminectomy Tray
- Kerrison Rongeurs and Pituitary Coreps tray

### ✓ **Otorhinolaryngologic (ENT) Trays :-**

- Basic Ear procedures tray
- Nasal procedures tray
- Myringotomy tray
- Tonsillectomy and Adenoidectomy tray
- Tracheostomy tray
- Antral Puncture tray

### ✓ **Ophthalmic Trays :-**

- Basic Eye procedures tray
- Eyelid and Conjunctival procedures tray
- Basic Eye Muscle procedures tray
- Cataract Extraction and Lense procedures tray
- Glaucoma Procedures tray
- Basic Eye procedures Microscope tray
- Retinal procedures tray

✓ **Pediatric Tray :-**

- Pediatric major procedures tray
- Pediatric minor Procedures tray
- Pediatric Gastrointestinal Procedures trays.

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# ANNEXURE "G"

## SYLLABUS

### ➤ **Principles of Nutrition and Nutritional Biochemistry**

- Carbohydrates, proteins, lipids and functions,
- Macro and micro elements and functions
- Fat and water soluble vitamins and functions
- Fiber, Water, Digestion and absorption of nutrients, bioavailability.
- Carbohydrate metabolism
- Protein metabolism
- Lipid metabolism
- Micronutrient metabolism, Drug nutrient interactions
- Enzymes and hormones
- Xenobiotics.

### ➤ **Medical Nutrition Therapy/Clinical**

#### **Nutrition/Dietetics/Nutrition in Health and Disease:**

- Principles of diet therapy
- Modifications of diets in febrile conditions, Oral and dental conditions
- Gastrointestinal and hepato-biliary disorders
- Disorders of energy metabolism- obesity, underweight
- Non-communicable diseases such as cardiovascular disorders, diabetes mellitus, hypertension and renal diseases, pulmonary disorders
- Nutrition in critical care, cancer and allergies.
- Food intolerances.

### ➤ **Food Science and Food Microbiology**

- Food groups
- Food preparation methods
- Food preservation techniques
- **Food analysis** – Proximate composition
- Sensory analysis
- Food processing techniques
- Food safety
- Food security

- Food hygiene.
- Food borne illnesses
- Hazard analysis and critical control points and good manufacturing practices
- Role of microorganisms in food processing
- Food additives
- Food fortification
- Food packaging.

### ➤ **Nutritional Epidemiology**

- **Nutrition research methods** - observational, case-control, cohort, randomized control trials
- Nutrition surveys and surveillance in India
- **Nutritional assessments** -anthropometry
- Biochemical, clinical and dietary surveys
- Monitoring and evaluation of nutrition programmes
- Nutrition education.

### ✓ **Public Health Nutrition**

- Nutrition security
- Nutritional status
- Malnutrition
- Under- and over nutrition
- Trends in nutritional status in India
- **Strategies to overcome nutritional challenges** - under-nutrition
- Anaemia
- Obesity
- Non-communicable diseases
- Nutrition intervention programmes in India
- World Health Assembly targets
- Trends in breast feeding practices in India
- Role of national and international agencies to combat malnutrition
- Nutrition education
- Maternal and child nutrition programmes in India.

### ➤ **Nutrition through Lifecycle**

- Balanced diet
- Meal planning

- **Nutrition during-** Pregnancy, lactation, infancy, toddlerhood, preschool stage, school going children, and adolescence.
- Growth and development during different stages of lifecycle
- **Nutrition for adults** - older adults and old populations.

### ➤ **Human Physiology**

- **Human body systems** – Cardiovascular system
- Digestive system
- Urinary system
- Blood & Lymphatic system
- Respiratory system
- Musculoskeletal system
- Endocrine Reproductive system.

### ➤ **Food Service Management**

- Meal planning
- Portion sizing
- Food service institutions
- Types of food service
- Food service equipment, lay outs, designs
- Principles of meal service and planning
- Catering service management
- Institutional food service.

### ➤ **Research Methodology and Biostatistics:**

- **Research Methodology** - Types of research, Types of research designs, Qualitative and quantitative research, applied research, Sampling methods, and Preparation of research proposal.

**Basic statistics** - Measures of central tendencies, dispersion, Uses of graphs and tables, Software in statistical analysis, Probability, Types of errors in statistics, Tests of significance, and Sample Size.

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# ANNEXURE "H"

## SYLLABUS

### ➤ General Human Biology & Disease

- Elementary Physics and Chemistry.
- Characteristics of living matter.
- The Structure of living matter.
- The Tissues
- Systems and various parts of human body.
- Development and types of Bones.
- Bones of Head & trunk.
- Bones of the Limb.
- Joints and Articulations
- Structure and Action of muscles
- The Chief Muscles of the Body
- The Blood
- The heart and Blood Vessels
- The Circulatory system
- The Respiratory System
- The Digestive System
- The Liver , Biliary system and Pancreas
- Nutrition and Metabolism
- Endocrine Glands and Exocrine
- The Urinary System
- The Nervous system.
- The Ear.
- The Eye
- The Skin
- The Reproductive System etc.

### ➤ Dental Anatomy & Physiology Pharmacology, Pathology including Microbiology

#### ✓ **General & Dental Anatomy**

- Elementary Knowledge of the jaws and teeth, Important between deciduous and permanent teeth. Chronology of eruption , elementary knowledge of occlusion of teeth. Relationship of teeth with investing tissues, muscles of mastication facial expressions and elementary knowledge of temporary mandibular joints.

#### • General & Dental Physiology and Histology

- Elementary knowledge of the structure and function of various dental and oral tissues e.g. gingival, periodontal membrane, alveolar process, cementum, enamel, dentine, mucous-membrane, pulp.
- Salivary glands and functions of saliva, mastication.

### ➤ General and Dental Pharmacology

- The Therapeutic drugs commonly used in dentistry and their effects. Practical diagnosis, dispensing of drugs.

### ✓ Dental Radiology

- Technical aspect of Dental Radiograph i.e. the taking, processing and mounting of Dental Radiographs, Radiation Hazards and protection against radiation.

### ➤ General Dentistry including Oral Surgery

General knowledge of various materials used in Dentistry such as impression material, Gypsum products, waxes, investing materials and various filling materials temporary and permanent.

#### ✓ **Chairside Assistants**

- Reception of Patient.
- Lay-out of reception room and Dental Surgery and Hygienist Clinic.
- Chairside Assistance and Techniques
- Local anesthesia and equipment.
- Methods of Sterilization and care of Dental Instruments.
- Basic principles in surgery.
- The use of instruments in Dental practice.
- Examination of Oral Cavity and Charting of teeth etc.
- Instructions to patients and recalls.
- Maintenance of Dental Unit / Instrument.

### ➤ Prosthodontics with Cosmetology

- Introduction and applied anatomy.
- History taking and Examination.
- Simple surgical preparation, impression taking.
- Selection of patient.
- Phonetics and anatomical articulation.
- Clasp retained partial denture-plan, treatment, design and management.
- Partially edentulous arches.
- Connectors- major and minor and functions.
- Retainers direct and indirect.
- Dentures functions, biomechanics, Survey, diagnosis, planning, partial and temporary relining, resilient lining, aids to retention and relief.

- Cosmetology and appearance.
- Dental Materials and its manipulation.

### ➤ Orthodontics

- Etiology, Classification and malocclusion.
- Skeletal maturation, growth, dentition with special reference to endocrines.
- Classification of dentofacial abnormalities , anthropometrics, cephalometrics.
- Examination of patient, differential diagnosis and treatment planning .
- Principle of mechanotherapy
  - Basics about tweed method, twin wire appliance, activators , plates appliances including tissue reaction and evaluation of treatment.

### ➤ General Hygiene, Nutrition, Community welfare, Conservative & Preventive Dentistry :

#### ✓ **Dental Hygiene and Oral Prophylaxis –**

- Definition of Hygiene.
- Objective of Dental Hygiene.
- Oral prophylaxis-various methods.
- Stains on teeth-and their management.
- Dental Plaque, Dental calculus.
- Brief description and the role of oral Prophylaxis in Gingivitis, Peritonitis etc.

#### ✓ **Clinicals –**

- Instruments, technique of Oral Prophylaxis.
- Polishing of teeth.
- Topical application of fluorides.
- Care of Oral Cavity and appliances during treatment of Maxillo-facial cases.

### ➤ Conservative & Preventive Surgery

- Dental Caries-Prevalence and Prevention.
- Periodontal Diseases, saliva in relation to Dental Health and diseases.
- Dental Health & Diseases.
- Dietary habits and dental Health , Malocclusion , Oral Cancer.

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# ANNEXURE "I "

## SYLLABUS

### ➤ Anatomy and Physiology, Public Health & Hygiene, Diseases.

- Elementary Physics and Chemistry
- Characteristics of living matter
- The structure of living matter
- The Tissues
- Systems and various parts of Human Body
- Development and types of Bones
- Bones of Head and Trunk
- Bones of the limb
- Joints and Articulations
- Structure and action of Muscles.
- The Chief Muscles of the Body
- The Blood
- The Heart and Blood vessels
- The Circulatory System
- The Lymphatic System
- The Respiratory System
- The Digestive System
- The Liver, Biliary System and Pancreas
- Nutrition and Metabolism
- Endocrine Glands and Exocrine Glands
- The Urinary System
- The Nervous System
- The Ear
- The Eye
- The Skin
- The Reproductive System etc.

**National Health Programmes :-** These should be practical internship training for six months as recommended by PCI 1080 hours, after two years successful by course before Diploma Pharmacy is awarded.

### Public Health and Hygiene.

#### **Public Health :-**

- History and Development
- Modern concept of public health and comprehensive health care
- Various Health Committees and their recommendations.
- Five Year plans priorities.

- Allocation for medical and Health services.
- Cost analysis of Medical and Health care.
- Health and Family Planning Organisations setup at the National The State, The District and Block levels functions of Primary Health Centre

**Diseases :-**

- Definition
- Concept and Practice.
- Measures and disease frequency investigation of an outbreak and control field trials.
- Insecticides and resistance, sterilization and disinfection, epidemiological methods and approaches.

➤ **Basic Medical Information Drugs & Antibiotics Basic Medical informations, Drugs & Antibiotics their preparation & Uses. :-**

- Kinds of drugs, characteristics of drugs, Balsems, Gums etc.
- Pharmaceutical Process and Methods
- General directions on dispensing, weighing and measuring. How prescriptions are written, prescription reading. How to calculate doses weights and measures, formulae for converting from one scale to other abbreviations used in prescriptions.
- Doses of drugs, pharmacoepial preparation and their doses, incompatibility, physical, chemical physiological and therapeutical.
- **Suppositories :-**How to prepare suppositories of special medicines pessaries, bougies, plasters etc.
- Ointments, Spray solutions or Nebulas, Inhalations, General rule about preparation of Mixtures.
- Ordinary bazaar medicines, their recognition, doses and uses.

➤ **Records Keeping:**

**Stores Records & Procedures :-** Clerical procedure in the good inward section. Records and procedures in main stores, classification and codification, keeping of stocks books, preparation of indents and methods of storing drugs.

➤ **First –AID & Home Nursing :Health Education including different types of Bandages, Emergency Health Care Services, Sterilization process & Disinfection procedures.**

- Outline of the First –Aid
- Structure and Functions of the body.
- Dressing and Bandages (Use of Triangular Bandages and Cotton Roller Bandage, Rubber Bandage and different types of Dressing.
- Cardio- pulmonary resuscitation.
- Wounds.
- Haemorrhage.
- Shock

- Electric Shock
- Different methods of artificial respiration
- Asphyxia
- Fractures and Dislocation
- Unconsciousness and Fainting
- Epilepsy and Hysteria
- Poisons including food poisoning
  - **Common Conditions :**
    - Foreign body in ear, eye and nose
    - Cramps
    - Frost – Bite
    - Bites and Stings
    - Epistaxis
    - Snake Bite
    - Dog Bite
- Transport of injured persons
  - **Use of Common medicines.**

### ❖ Home Nursing

#### **Introduction to Home Nursing :-**

- Nurse
- Sick Room
- Bed Making
- Patient's Toilet
- Observation of the Sick
- Infection
- Surgical Techniques
- Diet
- Medicines
- Special Conditions & Treatments
- Bandaging
- Further Observations
- Immunity & Infectious Diseases
- Care of the Aged and Long term patient Person
- Care of the Mentally Ill Healthy Patient
- Special Drugs their Control & Administration
- Preparation of the Patient for Operation and the after care
- Shock and Blood Transfusion
- Special Treatment
- Nursing in Special Diseases
- The Hospital Services
- Preparation for Special Treatment
- Child Birth and Its Management.

### ➤ Health Education

- Health Education Principles, Ethics, Attributes of health educator, essential steps and introduction to the main methods in health education. History

development and growth of health education in India. Various methods of Health Education.

➤ **Sterilization & Disinfection**

- Physical, Chemical and Mechanical Methods etc. Disposal of contaminated Media, Sterilization of Syringes, Glass Wares, apparatus etc.

➤ **Surgical Instruments, their names & uses, Preparation of patient for Operation, Pre & Post Operative patient care:**

**Surgical Instruments (Their Names & Uses):-**

- Instruments for general surgery.
- Operation of the face and Neck
- Operations of the Nose, Throat and Ear
- Ophthalmic Surgery
- Operations on the chest
- Operations on the Genito – Urinary Tract
- Gynecological and Obstetric Operations
- Orthopaedic Operations
- Neuro-Surgical Operations
- Operations on the Cascular System
- Trauma Surgery

**Preparation of Instruments Tray :-**

- Major Procedures Tray
- Basic / Minor procedures tray
- Limited procedures tray
- Thyroid Tray
- Long Instruments tray
- Biliary Tract Procedures tray
- Cholelithotomy tray
- Basic rigid Sigmoidoscopy tray
- Gastrointestinal procedures tray
- Rectal Procedures tray

**Gynecologic and Obstetric Trays :-**

- Dilatation of the Cervix and Curettage of the Uterus (D&C) tray
- Cervical Cone Tray
- Laparoscopy tray
- Abdominal Hysterectomy tray
- Caesarian Section tray
- Vaginal Hysterectomy tray

**Genitourinary Trays :-**

- Vasectomy tray
- Open Prostatectomy tray
- Kidney tray
- Thoracic Trays
- Mediastinoscopy tray
- Thoractomy tray
- Pacemaker tray

### **Cardiovascular Trays :-**

- Vascular procedures tray
- Vascular shunt tray
- Cardiac procedures tray

### **Orthopaedic Trays :-**

- Basic Orthopaedic procedure tray
- Minor Orthopaedic procedures tray
- Hip replacement tray
- Knee or Ankle Arthroscopy tray

### **Neurologic Procedures Tray :-**

- Craniotomy tray
- Laminectomy tray

### **Otorhinolaryngologic (ENT Trays) :-**

- Basic Ear procedures tray
- Nasal procedures tray
- Myringotomy tray
- Tonsillectomy and Adenoidectomy Tray
- Tracheostomy tray
- Antral Puncture tray

### **Ophthalmic Trays :-**

- Basic eye procedures tray
- Eyelid and Conjunctival procedures tray
- Basic Eye Muscle procedures tray
- Dacryocystorhinostomy tray
- Corneal Procedures tray
- Cataract Extraction and Lens procedures tray
- Glaucoma procedure tray
- Basic Eye procedures Microscope tray
- Retinal procedures tray

### **Pediatric Trays :-**

- Pediatric major procedures trays
- Pediatric minor procedures trays
- Pediatric Gastrointestinal procedure trays

## ➤ **Preparation of Patient for Operation, Pre & Post Operative Patient Care:-**

### **Pre-Operative Considerations :-**

Psychological support of the Surgical patient.

### **Protection of the Patient in Surgery :-**

- Admission Procedure
- Transfer Procedure Position
- Environmental Controls
- Electro Surgery
- Operative Records
- Counting Procedure

- Sterilization
- Emergencies and Disasters

 **Safety for Medical Assistant, Pharmacist in a Operation Theatre :-**

- In Service Education.
- Body Mechanic
- Fatigue factors
- Radiation Safety
- Infection Control
- Chemical Hazards.

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# ANNEXURE "J "

## SYLLABUS

### ➤ Anatomy and Physiology

#### ✓ **General:**

Introduction to the Human body. Terms used in Anatomy, (Surface anatomy, markings and locations of different body parts and important body planes. Planes and Regions of Thoracic, Abdominal and pelvic Cavities.

#### ✓ **Animal Cell :**

Structure of cell, function and cell divisions.

#### ✓ **Tissue System:**

Definition, structure & S function of epithelium, connective, Muscular, Fluid and nervous tissues.

#### ✓ **Cardiovascular System.**

Heart, pericardium, Arterial system, Venous system, Capillary, systemic circulation.

#### ✓ **Digestive System:**

Mouth , oesophagus, stomach, small intestine, large intestine, spleen, liver, Salivary Gland , Gall Bladder, pancreas, Physiology and Digestion Absorption and Assimilation of Food.

#### ✓ **Respiratory System:**

Noise , pharynx, larynx, trachea, Bronchi, lungs, pleura, physiology of Respiration-Expiration and Ins;piration, Internal and External Respiration, Breathing control, vital capacity . Tidal volume and Dead space.

#### ✓ **Reproductive system:**

- Male Reproductive system: Male Reproductive organs,
- Spermatogenesis, Testosterone and Secondary sexual characters.

Female Reproductive System: Vulva, internal reproductive organs menstrual cycle, ovarian hormones & Female breast.

#### ✓ **Excretory System:**

Introduction to Excretory body organs, structure of kidneys , ureters, Urinary, Bladder, Urethra, Physiology of filtration Reabsorption and secretion.

#### ✓ **Nervous System:**

Brain Meninges , ventricles spinal cord nerves and cerebro spinal fluids.

✓ **Lymphatic System:**

Lymph Glands, Thoracic Ducts. Composition & Circulation of Lymph.

✓ **Endocrine system –**

Definition, Pituitary Gland, Pineal gland. Thymus Gland Adrenal Glands Thyroid, Parathyroid Glands.

✓ **Sense Organs-**

Structure and function of Eye , Skin , Ear and Tongue.

✓ **Musculoskeletal System-**

Skull, vertebral column, shoulder girdle, Thoracic cage. Bones upper limbs, Bones of lower limbs, type of bony joints and movements.

➤ **General Physics**

Unit, Measurements, Motion, Newton's Law of Gravitation Work energy, Properties of matter & Archimedes principle.

✓ **Heat -**

Thermometry & Kinetic Molecular Picture of Heat, Thermal Expansion Transference of heat, heat energies, Calorimeter and hygrometry Practical points of heat in X-Ray equipment.

✓ **Light -**

Rectilinear propagation, Photometry reflection laws. Spectroscope optical instruments, velocity of Light X-Ray spectroscope.

✓ **Magnetism -**

Properties of Magnetism, Molecular Theory of Magnetism, magnetic field, Lines of Force, Magnetic forces and Territorial magnetism, Hysteresis.

✓ **Electricity -**

Simple electronic phenomenon, potential difference and electric current capacitor of condenser inductance, impedance, Electro magnetism resistance heating and chemical effect of current, electromagnetic induction, Laws, Ohm's law, Safety fuses Galvanometer, AC and DC currents, RMS value, Peak value.

✓ **Sound -**

Production of sound, wave motion, velocity of sound, Superimposition of sound musical sounds, vibration of strings, Air Columns etc. Production ultrasonic waves, Clinical application of ultra sound.

✓ **Transformers**

Principles construction of step up & down and Auto transformers, construction of high tension .Transformers rectification .Self rectification.

✓ **X-Ray**

Production of x-ray, properties, interaction with matter (Photo electric compton effect and pair production) luminescent effect, photographc effect, ionizing effect & biological effects.

✓ **Units and Measurements of X-Rays-**

Lonixation, Roentigen, Rad Rem, R.B.E. Radiaton badges, lionization chambers.

➤ **X-Ray Tube –**

- Construction of x-ray tube Targets, cooling and insulation, X-Ray Circuits , timers and rectifiers in x-ray, circuits, inter locking circuits, stationary and Ratatory anode tube.
- Quantity and Quality x-ray , H.V.T or VVL linear absorption co-efficient grids, cones cylinders, filters, focal spot size LBD FFD or LSD and OFD Fluoroscopy and Image intensifier

✓ **Radioactivity :-**

- Curie, Half life period, decay factor, radium, cobalt, caesium, dose. Dose rate exposure dose, Exit dose, Depth dose, isotopes and isobars, isodose charts and their uses.
- Gamma of X-Ray film (toe & shoulder region linear and Solarization) X-Ray tube calibration, sensitometer, densitometer.

✓ **Musculoskeletal System :-**

- Skull, vertebral column, Shoulder girdle, Thoracic cage. Bones upper limbs, Bones of lower limbs, Types of bony joints and movements.

➤ **Radiographic photography Technique (Dark room Techniques)**

✓ **Dark Room-**

- Definition and location of dark room, ideal design of dark room , light and radiation protection devices , safe light test, ventilation, dry and wet benches, Duplicator.

✓ **Radiographic Films-**

- Ortho-chromatic films , panchromatic films, Base, Bonding layer, emulsion and super coating of films. Non screen films CTA base and polyster base films. The structure of Double coated & single coated film.

✓ **X-Ray Cassettes -**

- Construction of various cassettes, cassettes care, mounting of intensifying screen in cassettes.

✓ **Intensifying screens-**

- Luminescence (Phosphorescence and fluorescence) construction of screens. Type of phosphors and pigments film screen contact, speed of screens-slow parafast care of intensifying screens . Intensification factors numerical proof and rare earth screens.
  - a) Mounting of intensifying screens.
  - b) Screen film contact.

✓ **Film Processing -**

Auto processing material for processing equipment and annual processing control on temperature chemical in Dark room the PH Scale.

- X-ray Developer
- X-Ray Fixer
- Film Rinsing Washing & Drying
- Preparation of processing chemicals, loading and unloading of cassettes,

✓ **Presentation of Radiograph-**

- Film identification- Direct or Stereoscopic views, trimming legends, record filling and report distribution..

✓ **Film Artifacts-**

- Definition, type and causes of radiation and photographic artifacts, factors affecting the quality control of radiograph.

## • **Radiographic General Procedures**

- Introduction- The Radiographic image (image formation, magnification image Distortion, Image, sharpness, Image contrast) Exposure factor and Anatomical Terminology.

✓ **Skeletal System-**

Upper Limb- Procedure for thumb, fingers, metacarpals, hand carpometacarpal joints, wrist joint, carpo-radio-ulnar joint, forearm, elbow joint, arm, special views for scaphoid bone, olecranon process , supra condylar projection in various type of injured patients.

- **Lower limb-** Procedure for toes, metatarsals, complete foot, tarsometatarsal, talocalcaneal joint, leg with ankle joint leg with knee joint, thigh with hip joint.
- **Shoulder Girdle and Bony thorax-** Procedures for scapula clavicle and head of humerus sternoclavicular joint , special views for clavicle. Head of humerus and scapula in various types of injured or dislocation cases.
- **Vertebral Column-** Normal curvature relative levels of vertebrae, procedures for atlanto-occipital joint, odontoid process, cervical spine , cervicodorsal spine , dorsalspine, dorso-lumbar spine, and spondylolysis.

- **Pelvic Girdle and Hip Joints :** - Procedure for whole pelvis, ilium, ischium and pubic bones, sacro – iliac joint symphysis pubis, acetabulum, neck of femur greater & lesser trochanter. Hip Joint with upper one third femur, special view for orthodosis. S.M. pinning and S.P. nailing and plating.
  - **Skull :-** Procedure for whole skull, localized for frontal occipital, temporal, external and internal auditory meatus, sella turcica, juglar foramen, for a magnum, optic foramen maxillae zygomatic bones, mandible, temporo-mandibular joints, styloids processes, cranio-vertebral junction.
  - **Teeth :-** National and International formulae and D.T and P.T. Procedures for maxillary and mandibular teeth (incisors canine, premolar and molar) for D.T and P.T cephalometry, orthopantogram, occulusal view for maxilla and mandible.
- ✓ **Chest-**
- Procedures for chest at six feet, lying down and erect positions, inspiration and expiration views , special views like lordotic , decubitus, MMR portable telerradiography, chest in pregnancy. High Kilovoltagage technique.
- ✓ **Abdominal Pelvis –**
- Preparation for procedure, procedure for upper abdomen, lower abdomen, KUB Gallbladder Stomach , small intestina and large intestine in Supine and erect position, special views in case of perforation etc supine and erect position, special views in case of performance etc.
- ✓ **Sinus –**
- Procedures for paranasalsinuse (frontal, ethmoid, sphenoid and maxillary sinuses.)
- ✓ **Soft Tissue Radiography-**
- Procedures for STM , STN abdomen and other body organs. invetogram procedures, manipulation of positions, immobilization , exposure, FFD in abnormal conditions of patients.
- ✓ **Hospital Practice and Care of Patients :-**
- Setup of Radiology department in Hospital, Hospital staffing and organization, Patients Registration, record filling, cases put up and dispatch devices, medico legal aspect of profession. Professional relationship of Radiographer with patient and organization staff.

## ❖ Special Investigation

- ✓ **Urinary Tract –**
- Plain Radiographs for UB Intravenous Pyelegraph, (IVP or IVU) Retrogratepyelegraphy, Micturting- cystourethrogram Retrograte Urethrogram.
- ✓ **Gastro –Intestinal Tract -**

- Plain Radiographs, abdomen, Barium Swallow, Ba meal ET, Ba Enema, double contract Baenema and instant Baenema, Miscellaneous Procedures, Gastrigraffim study, fluoroscopy,
- **Biliary Tract**
  - ✓
  - Introduction to biliary contrast oral choleystography (OCG) pancreatography (ERCP), HCG, Fistulogram Sinogram.
  - Basic principle and application of computerized tomography, ultrasound Magnetic resonance Imaging, Computer Radiography and Digital Radiography.
  - Contrast Agents, Contrast Reaction and their management, Emergency Drugs used in Radiology Department.

## ➤ Ardiological special procedures and radiotherapy

- **Introduction-** Importance of special procedure, parameters for a special procedure (indication, contraindication, patient preparation, accessories, contrast media, technique aftercare etc.
- Ideal step of different special procedure Laboratories (Cath-lab, Angiolab, U/S Lab. C.T. Center & M.R.I Centers) Accessories of a special procedure center.
- Contrast and different contrast media for various procedure, Adverse effects of contrast media.
- Handling of emergencies in Radiology deptt. Preparation of different contrast media. Uses of Drugs and other equipment in procedure roo. Checking of Instrument, drugs and their labellings knowledge of sterile and unsterile techniques.
- ✓ **Cardio-Vascular System -**

Plain Radiographs of Interested – Body part catheterization technique guidewires, Catheters, General complication of catheter technique.

- **Gngiography peripheral Angiograms -** Angiogram for upper and lower limbs
  - **Central Angiogram :-** Cardiac catheterization, Carohd Angiogram, Aotogram, Selective angiogram, Digital substmction angiography.
  - **Venography :** Plain Radographs of interested body parts.
    - Peripheral Venography :** Venography of upper and lower limbs. Intraosseous venography
    - Central Venography : -** Portal venography, Superior venacavography, Inferior Venacavography Retrograde selective Venography.
- **Central Nervous System -** Introduction to water soluble contrast & Oily contrast for C.N. System. Plain Radiographs of skull or vertebral column, ventriculography, Pneumo encephalography, Shuntography, Myelography, cisternography.
- **Respiratory Tract –** Plain radiographs of Face, Neck or Thorax Nasopharyngography Oropharyngography, Laryngography, Lung Biopsy.
- **Reproductive System : -** Plain Radiographs of interested body part Vesiculography Hystero Salpingography, Gynaecography.
- **Skeletal System :-** Plain Radiographs of interested bones, Arthrography (wrist, knee , Shoulder, Hip elbow, ankle joints ) Fistulography and Airmeatography.

Basic Principle and application of tomography computerized Tomography  
 Ultrasound, Magnetic resonance Imaging. Manual Substruction & Duplicating  
 techniques.

- **Radiotherapy :-** Physical Principles of Radio Therapy general Pathology in Relation to Radiation Therapy Radiation Treatment & Types of Sources, cobalt Calcium and Radium. Radiotherapy its advantages & Disadvantages Radio therapy Tubes, Radiotherapy Techniques for skin, respiratory, Digestive Urinary, Reproductive, Endocrine and Nervous diseases, Kilovoltage techniques, External & Internal Radiation technique in various diseases. Plesiotherapy Dose data, uses of isodose chart for correction of isodose curve. Basic Principles of CT & MRI and application.

## ➤ Medical OPD / Emergency / Ward Tray with Physician.

### ✓ **Electrocardiography & Techniques -**

- Definition of ECG, EMG. Introduction to Electro Cardiography. History Physiological basic, Vector concept in ECG, Conduction velocity, Impulse generation, Impulse Transmission, Normal cardiacrhythm, Blood pressure, Pulse rate, Central Terminal of Wilson, Unipolar limb leads, Biopolar limb leads, Augmentation, Esophaheal leads, Jelly used in ECG different colour codes in ECG leads.

### ✓ **Normal Electrocardiograms -**

- Normal paper speed, standardization, Calibration, Filters, Normal heart position, Interpretation of ECG. Atrial complex (p-wave), P-R interval, QRS complex, QT Interval, ST segment, T-Wave, Purkinjee fibres repolarization. Duration and amplitude of different normal waves recorded in an ECG. No. of complexes to be recorded in a normal ECG.

### ✓ **Abnormal Electrocardiogram -**

- Abnormal P-wave, Interventricular conduction defect, RBBB (Right bundle Branch Block) LBB (Left Bundle Branch Block). Hypertrophy, RVH (Right Ventricular Hypertrophy), LVH (Left Ventricular Hypertrophy), WPH (Wolf Parkinson white Syndrome.) Bilateral Bundle Branch Block. Trifasicuair Blocks. Lown-Ganong Levine-Syndrome, Mahim by pass, Pulmonary embolism. Chronic Obstruction. Mitral Lung disease (COPD). Biventricular Hypertrophy, Myocardial infarction Mitral Stenosis. Mitral valve prolapsed, Paroxy small Atrial Tachycardia. Sick-Sinus-Syndrome, Supra Ventricular Tacheardia. Left Posterior and anterior hemi block.

### ✓ **Coronary Artery Disease -**

- Ischemia, Injury, Infarction, Subtle, Atypical, Non-specific patterns. Condition defects and infarctions, Location of infarctions, ventricular premature beat and acute infarctions, coronary insufficiency. Atherosclerosis Thrombo embolism.

### ✓ **Drugs and Electrolytes -**

- Adrenaline, Acetyl choline, Digitalis, Quinidine, Potassium, Hyperkalemia and Hypokalemaia, Hyper and Hypo Calcemia. Phenothiazines. Anthro Cyclines, Cerebro

Vascular Accidents (CVA). Hypo and hyper Thermia, pericarditis, Myocarditis. Heart trauma. Pericardial effusion. Malignancy of heart. Cardiomyopathies, Electrical Alternans, Negative V-Wave, Liquid Protein diet Anaemia etc.

### ✓ Exercise Test -

- Definition, Acetyl Choline, Digitalis, Quinidine, Potassium. Hyperkalemia and Hypokalemia, Hyper and Hypo Calcemia. Phenothiazines. Anthro Cyclines, Cerebro Vascular Accidents (CVA), Hypo and Hyper thermia, pericarditis, Myocarditis. Heart Trauma. Pericardial effusion. Malignancy of heart. Cardiomyopathies, Electrical Alternans, Negative V-Wave, Liquid Protein diet Anaemia Etc.

### ✓ Disorders of Cardiac Rhythm -

- Disbalance of impulse formation at SA node, disturbance of impulse conduction, Secondary disorders of rhythm, Physiology of cardiac rhythm, automaticity. Atrioventricular node, Sinus rhythm, Sinus tachycardia, Sinus bradycardia, Sinus Arrhythmia, Sinoatrial block, partial SA block, complete SA block, causes of exit block, Atrial Extrasystoles, Blocked Atrial extrasystole, Wandering Pacemaker, Paroxysmal Atrial tachycardia (PAT) Chaotic atrial rhythm, Atrial Flutter, Atrial Fibrillation, Supraventricular tachycardia (SVT.) Ventricular tachycardia (VT) Ventricular fibrillation. Sick sinus syndrome etc.

### ✓ ECG as a Clue to Clinical Diagnosis -

- Pulmonary Stenosis, tricuspid atresia, Atrial septal defect, Ventricular septal defect, Ebstein Anomaly, Corrected Transposition of great vessels, Mirror image dextrocardia, Anomalous Origin of left coronary Artery, Rheumatic Heart Disease (RHD), Mitral valve prolapsed, Athlete's Heart, cardiac Pacemaker etc.

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# ANNEXURE "K "

## SYLLABUS

### ➤ Anatomy

- Introduction to Anatomical terms organization of the human body
- The Skeletal System
- The Muscular System
- The Nervous system
- The sensory organs
- Circulatory and lymphatic system
- The Respiratory System
- The Digestive System
- The Excretory System(Urinary)
- The Endocrine system
- The Reproductive System including breast The Eye
- The Skin
- The Reproductive System including breast

### ➤ Physiology

- **Cell Physiology**
- Muscular System
- Nervous Systems
- Circulatory system
- Respiratory system
- The Digestive system
- The excretory system
- The sensory organs
- The endocrine system
- The reproductive system
- Lymphatic and immunological system

Skeletal System

### ➤ Nutrition

- Introduction
- Carbohydrates
- Fats
- Proteins
- Energy
- Vitamins
- Minerals
- Water electrolytes

- Cookery rules and preservation of nutrients
- Balanced diet
- Role of nurse in nutritional programmes

### ➤ Biochemistry

- Introduction
- Structure and functions of cell membrane
- Composition and metabolism of carbohydrates
- Composition and metabolism of lipids
- Composition and metabolism of Amino acids and proteins
- Composition of Vitamins and minerals
- Immunochemistry

### ✓ Fundamentals of Nursing and First AID with applied Science

- Introduction
- Nursing as profession
- Hospital admission and discharge
- Communication and Nurse patient relationship
- The Nursing Process
- Documentation and Reporting
- Vital signs
- Health Assessment Machinery Equipment and linen
- Meeting needs of patients
- Infection control in Clinical setting
- Administration of Medications
- Meeting special needs of the patient

### ➤ Psychology

- Aims and Methods of Psychology
- Biology of behavior
- Cognitive process
- Motivation and emotional processes
- Personality
- Developmental Psychology
- Mental hygiene and mental Health
- Psychological reaction to illness

### ➤ Microbiology

- Introduction
- General characteristics of Microbes Infection control
- Pathogenic organisms Immunity
- Classification of Bacteria
- Immunity & Immunization procedure

- Vacumes, Sera, Toxide & Toxins
- Serological Tests

### ➤ Sociology

- Introduction
- Individual
- Culture
- Social groups and processes
- Population
- Family and Marriage
- Social Stratification
- Types of communities in India Rual, Urban, and Regional)
- Social Change
- Social Organization
- Social control
- Social Problems

### ➤ Pharmacology

- Introduction to pharmacology
- Chemotherapy
- Pharmacology of commonly used antiseptics, disinfectants and insecticides
- Drugs action on G.I. system
- Drugs used on Respiratory systems
- Drugs used on urinary system
- Miscellaneous
- Drugs used on skin and mucous membranes
- Drugs action on Nervous system
- Cardiovascular drugs
- Drugs used for hormonal disorders and supplementation, contraception and medical termination of pregnancy
- Introduction to Drugs used in alternative system of medicine

### ➤ Pathology

- Bronchial asthma
- Cardio-vascular system
- Gastro intestinal Tract
- Liver Gall bladder pancreas
- Kidney urinary tract
- Male genital system
- Female genital system
- Cancer Breast
- Central Nervous system
- Metastatic turnour

- Skeletal system
- Clinical Pathology
- Examination of body cavity fluids, transudates and exudates
- Urine and faeces

## ➤ Genetics

- Introduction
- Maternal prenatal and genetic influences on development of defects and diseases Genetic testing in the neonates and children
- Genetic conditions of adolescents and adults
- Services related to Genetics

## ➤ Medical Surgical Nursing (Adult including Geriatrics)-I

- Introduction
- Common signs and symptoms and management
- Nursing management of patients (adults including elderly) with respiratory problems  
Nursing management of patient adults including elderly) with blood and cardio vascular problem
- Heart
- Nursing management of patient adults including elderly with genitor- urinary problems  
Nursing management of disorders of male( adults including elderly) reproductive system  
Nursing management of patient( adults including elderly) with disorders of endocrine system
- Nursing management of patient (adults including elderly) with disorder of integumentary system
- Nursing management of patient adults including elderly) with musculoskeletal problems  
Nursing management of patient adults including elderly with immunological problems  
Nursing management of patient adults including elderly) with communicable Diseases  
Peri operative nursing

## ➤ Community Health Nursing

- Introduction
- Determinates of health
- Epidemiology
- Epidemiology and nursing management of common Communicable Diseases
- Viral
- Bacterial
- Rickettsial diseases
- Parasitic zoonoses
- Surface infection
- Epidemiology and Nursing management of Non-Communicable diseases
- Demography
- Population and its control
- Health planning and policies and problems

- Community health nursing approaches, concepts and roles and responsibilities of nursing personnel
- Assisting individuals and groups to promote and maintain their health
- Assessment of self and family
- Seek health services for
- Maintenance of Health Records for self and family
- Continue Medical care and follow up in community for various diseases and disorders

### ➤ Communication Educational Technology

- Review Communication process
- Interpersonal Relations
- Human relations
- Guidance counseling
- Education media
- Assessment
- Information, Education communication for health (IEC)

### ➤ Medical surgical Nursing Adult including Geriatrics – II

- Nursing management of patient with disorders of Ear Nose and Throat
- Nursing management of patient with disorders of eye
- Nursing management of patient with neurological disorders
- Nursing management of patients with disorders of female reproductive system
- Nursing management of patients with Burns, reconstructive and cosmetic surgery Nursing
- Management of patient with ontological conditions
- Nursing management of patients in Emergency Disaster situations
- Nursing care of the elderly
- Nursing management of patient in critical care units
- Nursing management of patients adults including elderly with occupational and Industrial disorders

### ➤ Paediatric Nursing

- Introduction
- Modern concepts of childcare
- The healthy child, Immunization
- Nursing care of neonate
- Integrated management of neonatal and childhood illnesses (IMNCI)
- Nursing management in common childhood diseases
- Management of behavioral social problems in children
- Fluid and Electrolyte Balance.

### ➤ Mental Health Nursing

- Introduction
- Principles and concepts of Mental Health Nursing
- Assessment of Metal health
- Classification of Mental disorders.

- Therapeutic communication and nurse –patient relationship
- Assessment of mental health status
- Therapeutic communication and nurse-patient relationship
- Treatment modalities and therapies used in mental disorders.
- Nursing management of patient with Schizophrenia, and other
- Psychotic disorders
- Nursing management of patient with mood disorders.
- Nursing management of patient with neurotic, stress related and somatization disorders
- Nursing management of patient with Substance use disorders
- Nursing management of patient with personality, Sexual and eating disorders
- Nursing management of childhood and adolescent disorders including mental deficiency
- Nursing management of organic brain disorders
- Psychiatric emergencies and crisis intervention
- Legal issues in Mental Health Nursing
- Community Mental Health Nursing

### ➤ Midwifery and obstetrical Nursing

- Introduction to midwifery and obstetrical Nursing
- Review of anatomy and physiology of female reproductive system and foetal development
- Assessment and management of pregnancy (ante-natal)
- Assessment and management of intra-natal period
  - ✓ **Second stage**
  - ✓ **Third stage**
  - ✓ **Fourth Stage**
- Assessment and management of women during post natal period
- Assessment and management of normal neonates
- High-risk pregnancies-assessment management
- Abnormal labour assessment and management
- Abnormalities during postnatal periods
- Assessment and management of High risk newborn
- Pharmaco-therapeutics in obstetrics

### ➤ Nursing Research and statistics

- Research and research process
- Research problem/ Question
- Review of literature
- Research approaches and designs
- Sampling and data collection
- Analysis of data:
- Introduction to statistics
- Communication and utilization of research

### ➤ Public Health Nursing & Health Administration

- Introduction to public Health & Community Nursing
- Management of nursing services in the hospital and community Organizational behavior and human relations
- In Service education
- Management of nursing educational institutions Nursing as profession
- Professional Advancement
- Organisation and Administration of Health Services in India
- Role of epidemiology in community health.
- Medico – legal aspects in public health nursing.

- Nursing Educational Programmes in India
- Nursing Registration and Nursing Legislation.
- Nursing organization.
- Introduction to Administration
- Organisational structure.
- Personnel Administration.
- Finance
- Elementary principles of accountancy

### ➤ Operation Theatre Techniques

#### ➤ **Operation Room Nursing**

- Responsibilities of operation room nurse
- Preparation of theatre and theatre dress
- Sterilization of instruments, utensils and Dressing Linen-Cleaning and Packing
- Suture, Ligature and surgical needles.

#### ✓ **Anesthesia –**

- Types of Anesthesia and resuscitation of patient, endotracheal intubation.
- Various positions used in O.R. Manipulation of table
- Care of patient before, during and after operation, Transportation of patients.
- Common instruments used in various surgical operations. Assisting in various types of surgery.

#### ✓ **Operation Theatre techniques –**

- ✓ Operation theatre unit, carbolization and setting up, scrubbing of hands, wearing of gown, masks and gloves, chemical substances used in the theatre, anesthesia, ligature and sutures, needles, articles for general, spinal and rectal anesthesia.

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# ANNEXURE "L "

## SYLLABUS

### **ANATOMY** ✓ Theory

#### ✓ **Introduction**

- Different parts of the human body, common Anatomical terms, Anatomical Positions and important planes.
- Animal Cell
- Tissue of the body, classification and function
- Primary tissues of the body.

#### ✓ **Skeletal System**

- Joints & Movements
- Muscle & Monce

#### ✓ **Gastro-intestinal System**

- Mouth and Pharynx
- Salivary Glands and Tonsils
- Oesophagus and Stomach
- Location of different organs in the Abdomen in situ
- Liver and Gall Bladder
- Spleen and Pancreas.

#### ✓ **Genito-Urinary System**

- Kidney
- Ureters, Bladder and Urethra
- Male Reproductive System
- Female Reproductive System

#### ✓ **Respiratory System**

- Thoracic, Pleura and Lungs

#### ✓ **Cardio Vascular System**

- Heart and Pericardium
- Arterial System

- Venous and Lymphatic System

### ✓ **Nervous System**

- Meaning and cerebrospinal fluid
- Brain, Spinal cord and the Nerves.

### ✓ **Loco-Motor System**

- **Parts of upper Limb** :- Bones Land marks and important vessels

## **PHYSIOLOGY**

### ✓ **Theory**

#### ✓ **Blood**

- Composition and General function of Blood
- **Description of Blood cells** :- Normal Counts and function.
- Anti-conagulants

#### ✓ **Cardio-Vascular System**

- Function of heart and blood vessels.
- Circulation :- Systemic Circulation Pulmonary Circulation.

#### ✓ **Respiratory System**

- Name of the Structure involved in respiration and their function.
- External and Internal respiration. How respiration and expiration are brought about.
- Transport of  $O^2$  and  $CO^2$  in the blood.
- Definition of respiratory Rate, Tidal Volume, Vital Capacity, Cyanosis, Hypoxia.

#### ✓ **Excretory System**

- Functions of Kidney
- Formation & Composition of Urine Normal and abnormal constituents.

#### ✓ **Skin**

- Functions of skin

#### ✓ **Digestive System**

- Composition and functions of saliva, Mastication and deglutition.
- Functions of Stomach, Composition of Gastric Juice Pancreatic Juice, Bile and Succus entericus.

#### ✓ **Endocrine Glands**

- Definition, name and the hormones secreted by them.
- Major action of each hormone.

## ✓ **Reproductive System**

- Male Genital System
- Female Genital System
- Names of Primary and Accessory Sex organs in male and Female. Secondary Sexual characters in male and Female.
- Functions of ovary, formation of Ova, actions of ovarian hormones.
- Functions of Testis – Spermatogenesis and actions of testosterone.

## ✓ **Blood Group**

- ABO and Rh. Basis for classification, basis for determination, importance and Blood Groups.

## ✓ **Cerebrospinal Fluid**

- Formation, composition and functions.

## ➤ **Practical**

- Demonstration of parts of body(Bony) landmarks on the surface
- Identification of cells and basic tissues.
- Skeletal System, Identification of Bones and Joints
- Demonstration of Interior of Thorax with organs in Situ.
  - Respiratory System and Pleurae
  - Heart and Blood Vessels
- Demonstration and Identification of various organs within abdomen
  - Liver and Gall Bladder
  - Peritoneum stomach and Intestine.
- Male Genital System
- Female Genital System
- Central Nervous System, Spinal Cord and Site of Lumbar Puncture examination will be :-
- Identification of bones or parts of skeletal system
- Identification of basic tissues under the microscope
- Identification of certain organs and Viva
- Surface marking of any of the important organs.
- Identification of sites of blood vessels or muscles for injections and site of lumbar puncture.
- Microscopic – Usage, maintenance and Minor repairs
  - Behaviour of RBC in isotonic, Hypotonic and Hypertonic Sodium Chloride Solution
- Identification of Blood Cells Focused under Microscope :-
  - RBC
  - Various types of WBC
  - Platelets
  - Reticulocytes.
- To obtain samples of Plasma and Serum
- Preparations of Anti-Coagulants : double oxalate and Sodium Citrate
- Haematocrit

- Identification of ruled area in Neubauer's Chamber RBC and WBC Pipettes and Wintrob's and Westergren Pipettes
- Demonstration of Normal Constituents of Urine and Abnormal Constituents E.G Glucose and Protein
- Record Writing.

## **CLINICAL BIO-CHEMISTRY**

### ➤ Theory

- Elementary knowledge of Inorganic Chemistry Atomic Weight Molecular weight, Equivalent weight –Acids, basis and Salts Indicators Molar Solutions, Buffer Solution, Titration (Acid Base) Definition of Solution. Methods of expressing concentration – Dilution.
- Elementary knowledge of organic Chemistry – organic Compounds. Aliphatic and Aromatic. Alcohols, Aldehydes, ketones, Amines, Esters, Phenol, Acids Colloids etc.
- Elementary of Analytical Chemistry I Instrumentation, centrifuge Balances, Colorimeter, Spectrophotometer, Flamephotometer, Fluorimeter etc.
- Aims and Scope Biochemistry.
- Carbohydrates :- Importance, Definition, Classification some properties.
- Proteins – Aminoacids, essential amino acids, peptides, denaturation of proteins, Physiologically important proteins, functions of plasma proteins.
- Lipid – Definition, Classification, Steroids, Examples.
- Nucleic Acids- DNA and RNA their importance.
- Haemoglobin
- Enzymes and Co-Enzymes Elementary.
- Gastric Juice collection Acidities.
- Carbohydrate – Metabolism – elementary aspects, definition of Glucolysis, Glycogenolysis Hormonal regulation of Blood Sugar Diabetes-Mellitus – Ketosis, Glycosuria, Renal Glycosuria, Pentosuria.
- Metabolism of Lipids – elementary aspects, Triglycerides, Cholesterol, Plasma Lipoproteins- Ketone bodies and Ketonuria.
- Protein Metabolism – Formation of Urea, Creatinine Proteinuria Edema, Transaminases
- Water and Mineral Metabolism – Dehydration, Calcium Phosphorus, Sodium, Potassium, Chloride, Iron, Iodine their physiological functions and disease state.
- Hormones – definition, functions of some important hormones.
- Blood and cerebrospinal Fluid functions of Blood & CSF.
- Urine Normal and abnormal tests.

### ➤ Practical

- Basic Techniques :-
- Cleaning of Glassware
- Preparation of Chromic acid wash solution
- Preparation of saturated solution.
- Types and use of pipettes.
- Balance types and uses.
- Preparation of percent solution / volume / volume components (V/V)
- Preparation of percent solution weight by volume (W/V) solution.
- Preparation of Molar Solution.

- Preparation of Buffer Solution.
- Indicators pH, determination of unknown solutions.
- Preparation of Normal Solutions.
- Titration – (Acid Base) Preparation of Primary Standards.
- Titration preparation of Normal Solutions
- Preparation of Protein Filtrates.
- Use and maintenance of centrifuge.
- Colorimeter – types, components, use and maintenance.
- Colorimetry.
- Colorimetry – Choice of filters.
- Spectrophotometer components and use demonstration.
- List of spare parts of equipments maintenance.
- Distillation of water-setting up Glass Distillation Unit and Metal water Distillation Unit.
- Diagnostic tests on Urine :-
  - Collection and preservation.
  - Physical characteristics and specific gravity
- U
  - Qualitative tests for urea, Uric Acid, Creatinine, Calcium, Phosphorus, Sodium, Potassium and Chloride.
  - PH.
  - Urea clearance and Creatinine clearance.
- Abnormal Constituents of Urine.
  - Qualitative test for Sugar, Albumin, Ketone Bodies, Blood, Bile Salt and Bile Pigment.
- Da.....tests on Blood.
  - Collection and preservation of Blood, Serum and Plasma.
  - Estimation of Blood Sugar.
  - Glucose Tolerance test.
- Non-Protein nitrogenous compound :
  - Determination of Serum Urea, Uric Acid and Creatinine
- Determination of Serum Protein
  - Albumin, Globulin, Fibrinogen & AG ratio.
- Serum Electrolytes.
  - Determination of Na<sup>+</sup>, K<sup>+</sup> and Cl.
  - Determination of inorganic Phosphorus
  - Determination of Calcium.
- Serum Enzymes :
  - Determination of transaminases (GOT and GPT)
  - Determination of Phosphatase (Alkaline phosphate and acid Phosphate)
  - Determination of Amylase
- Serum Bilirubin :
  - Determination of total and direct bilirubin
- Serum Lipids :
  - Lipid Profile
  - Determination of Serum Cholesterol
- Liver Function Tests.
- Diagnostic test on other body fluids
- Gastric juice :-
  - Test of HCl. Blood and Starch
  - Free and Total acidity
  - Gastric function tests.

- Cerebrospinal Fluid
  - Determination of sugar
  - Determination of Proteins
  - Determination of Proteins
  - Pandy's test.
- Kidney or renal function test :
  - Importance of renal function tests
- Tests
  - Concentration / Specific Gravity test
  - Dilution test
  - Urea Clearance Test
  - Creatinine Clearance test
- Laboratory Maintenance and empowerment
  - Quality Control
  - Automation and Kits
  - Laboratory Management.

## MICROBIOLOGY AND PARASITOLOGY

### ✓ Theory

#### Requirement and use of Common Laboratory Equipment.

- Incubator, Hot Air Oven, Autoclave, Water bath, Anaerobic jar Vacuum Pump, Media Pouring Chamber, refrigerator, Centrifuge

#### Microscope.

- Principal, Operation, Care and Use of Microscope

#### Sterilization and Disinfection.

- Classification and General principles of Sterilization. Physical Chemical and Mechanical Methods Disposal of contaminated media, Syringes, Glassware, Apparatus.

#### Classification and Morphology of Bacteria.

- **Brief Outline of :-**
  - Structure of cell, capsule, Flagella and spores
  - Growth Bacteria
  - Nutrition of Bacteria.
- **Staining of Bacteria :**
  - Simple, Grams, Ziehl-Neelsen, Albert, Spore Stain
  - Composition and preparation of Staining reagents
- **Cultivation of Micro Organisms – I (In Detail)**
  - Classification of Media, Composition of Laboratory culture media and Special Media
- **Cultivation of Micro Organisation – II (In Detail)**
- **Identification of Bacteria :**
  - Cultural Characters, Bio Chemical reactions and serotyping.
  - Normal Flora of micro Organisms in the human Body.
  - Gram positive and Gram Negative co....Staphylo.....Pneumococcus Neisseria (in brief)

- **Gram negative Bacilli :**

- Salmonella, Shigella, E.Coli, Klebsiella, Proteus, Pseudomonas, Vibrio cholera, Haemophilus (In brief)
- **Gram Positive Bacilli**
  - **Aerobic**
    - Corynebacterium diphtheriae
    - Mycobacterium tuberculosis and Mycobacterium leprae.
  - **Anaerobic bacilli – Clostridia**
- **Antibiotic Sensitivity test** – Principles and methods of determination of sensitivity.
  - Candida, Aspergillus, Dermatophytes
- **HIV & AID**
  - Brief Account
- Immunity, Antigens, Antibodies and Antigen antibody reaction and their applications in diagnosis of diseases.
- Principles, Procedures and Diagnostic significance of agglutination, Precipitation, Neutralization and complement fixation reactions.
- Collection and processing of Clinical materials like Sputum, Urine Swabs, Stool, Blood, CSF and Aspirates.

### ✓ **Parasitology :**

#### **Brief Account of :- Morphology, Life Cycle, Pathogenicity and Laboratory Diagnosis of :-**

E. Histolytica, E. Coli, Giardia, Trichomonas, Plasmodium, Leishmania, Hookworm, Round worm, Whip worm, Tape worm, Echinococcus granulosus, Dracunculus, Wuchereria Bancrofti.

## ➤ **Practical**

### ✓ **Microbiology Practicals :**

- Personal safety and precautions.
- Emergency treatment for Laboratory accidents
- Care and Cleaning of Glasswares, Syringes, apparatus, preparation of Pasteur pipettes and sealing of ampules.
- Operation of Autoclave, Incubator, Water bath, PH meter, Scitz filter, Ph comparator, Vacuum pump.
- Operation of Anaerobic system.
- Urine C/s & Colony count.
- Pus C/S.
- Sputum C/S and Blood C/S.
- Sterilization, Packing Loading of materials in Autoclave, Hot Air Oven, Inspissator.
- Handling care of Microscope
- Preparation of various Media, Pouring and Storage
- Hanging Drop Method
- Collection of Clinical Materials – Blood, Urine, Stool, Pus Swab, Throat Swab
- Receipt and Recording of specimen in the Laboratory and dispatch of specimen to reference laboratory for tests.
- Gram Stain, Z.N Stain, Albert's Stain, Capsule Staining
- Inoculation of Clinical Material in Media
- Isolation of Organisms in pure culture.
- Antibiotic Sensitivity test
- Disposal of contaminated materials

- Fungus Examination by wetmount of culture.
- Animal house training collection of blood of sheep and horse.

### ✓ **Parasitology Practicals :**

- Collection, Preservation and Transporation of fear material for examination of Parasites.
- Preparation of stained and unstained feal material for parasites.
- Concentration Techniques of Stool
- Preservation of Parasites
- Identification of Ova and Cyst in stool. Occult Blood
- Parasites Blood films.
- Serology :-
  - Widal
  - VDRL
  - Ra Test
  - CRP test
  - ASO test
- Elisa for IIIV – 1 & 2.
  - HBsAg (Australia Antigen)
  - Pregnancy Test.
- Diagnostic Skin Test
  - Mauntoux Test
  - Casoni's Test

## **CLINICAL PATHOLOGY AND HAEMATOLOGY**

### ✓ **Theory**

- Introduction of Haematology
- Collection of Blood
- Antieoagulants
- Red Cell Count :
  - Haemocytometer
  - Methods
  - Caloculation.
- White Cell Count. (Total Leucocyte Count:
  - Morphology of White Cells.
  - Normal Values.
  - Romanowsky Stains
  - Staining Procedures.
  - Counting Methods
- Absolute Eosi Nophil Count :
- Erytrocyte Sedimentation Rate (ESR)
  - Westergren's Method
  - Wintrobe's Method
  - Factors effecting ESR
  - Importance and Limitations
  - Normal Values.
- Packed Cell Volume.
  - Macro and Micro Methods
  - Normal Values.
- Haemoglobin Estimation and its clinical Importance

- Red Cell indices.
  - Calculations and importance.
- Retienlocyte Count :
  - Methods
  - Appearance
  - Normal Values.
- Sickle Cell Preparation.
- Osmotic Fragility Test
  - Scorning Test.
  - Qualitative and Quantitative Test
  - Normal Values.
  - Factors allocating fragility
  - Interpretation
- Peripheral Blood Film
- Preparation of Bone Marrow Smears
- Coagulation Tests.
  - Process of Coagulation
  - Factors of Coagulation
  - Tests of Coagulation
    - Bleeding time
    - Whole Blood Coagulation Time
    - Clot Retraction Test
    - Toorniquet Test
    - Platelet Count
- Urimanalysis
  - Normal Constituent.
  - Physical Examination
  - Chemical Examination
  - Microscopic Examination
- CSF Examination
  - Normal and abnormal Cell Count
- Semen Analysis
  - Physical Preterition
  - Motility
  - Morphology
- Coomb's Test.

### ✓ **Histotechnology :**

- Introduction
- Cell, Tissues and their functions
- Examination Methods of Tissues and Cells
- Fixation of Tissue :
- Classification of fixatives :
  - Simple fixatives and their properties.
  - Micro anatomical fixatives.
  - Cytological fixatives.
- Tissue Processing
  - Collection of specimen
  - Labeling and Fixation
  - Dehydration
  - Cleaning
  - Impregnation

- Section Cutting
  - Microtomes and their Knives
  - Techniques of Section cutting
  - Mounting of Sections
  - Frozen Section
- Staining
  - Dyes and their properties
  - Theory of Staining
  - Staining Techniques with haemotoxlin and cosin
  - Mounting of Sections
  - Common Special Stains
- Decalification
  - Fixation
  - Decalification
  - Detection of end point
  - Neutralization and processing
- Exfoliative Cytolgy
  - Types of specimen and preservation
  - Preparation and fixation of smears.
  - Papanicolaou Staining Techniques
  - Sex Chromatin Staining
- Museum Technique.
  - Reception of specimen
  - Preparation of fixation
  - Restoration of colour
  - Presevation
  - Presentation
- Autopsy Technique
  - Assisting in Autopssy
  - Preservation of organs & Processing of Tissue.
- Waste disposal and safety in laboratory.

## ➤ Practical

### ✓ **Pathology Practicals :**

#### ▪ **Clinical Pathology :**

- Use of Microscope & Care
- Haemoglobin estimation
- ESR
- RBC Count
- WBC Count
- Platelet Count
- Absolute Eosinophil Count
- Reticulocyte Count
- PCV
- Leishman Staining and PBF – Normal and abnormal Cells
- Bleeding time
- Clotting time
- Bone Marrow Aspiration – Staining, Staining for Iron Stores
- Prothrombin Time – PTI

- Tests for G6PD deficiency
- Fowtal Haemoglobin Estimation
- Serum / Urine Electrophoresis
- Coombs Test.

## **Urine Examinations**

- Physical Examination Colour Reaction Odour Specific gravity Urinary Volume

## **Chemical Examination**

- Tests for protein, 24 hours Urinary proteins
- Bence Jones Proteins
- Tests for sugar, Ketone bodies
- Urine for bile salts, bile pigments and Urobilinogen
- Microscopic examination of urine
- Semen Analysis.

## ✓ **Hestotechnology Practicals**

- Fixation Processing, Embedding, Section cutting and preparation of Slides.
- Staining of slides H&E Reticulin, PAS Masson Trichrome
- Sharpening of knives for microtomes
- Preparation of adhesive to fix the section to the slide.

## **Cytology Practicals**

- Collection of samples for cytological examination of various body fluids
- Preparation and fixation of cytology smears. Giemsa and papanicolaon staining technique
- Sex Chromatin technique
- FNAC
  - Blood Bank
  - Theory
    - Introduction and Historical aspects
    - Human Blood Group Antigens, their inheritance and antibodies
    - ABO Blood Group System
    - Sub Groups
    - Source of Antigens, types of antibodies.
- Rh. Blood Group System.
  - Momenclature and types of Antigens
  - Mode of inheritance
  - Types of antibodies
- Other Blood Group System
- Techniques of Grouping and Cross Matching.
- Blood Collection
  - Selection and Screening of Donor.
  - Collection of Blood

- Various anticoagulants used
  - Storage of Blood.
- Blood Transfusion.
  - Procedures and Complications
  - Blood Transfusion Reaction, Types, Investigation and Presentation of Transfusion Reaction.
  - Coomb's test.
  - Organisation, operation and Administration and Blood Bank.


## ➤ BLOOD TRANSFUSION TECHNIQUES

### ○ Practical

- ABO Grouping.
  - Slide Technique
  - Tube technique
- Cross Matching.
  - Methods of major Cross Matching
- Rh. Typing.
  - Rapid Tube Test
  - Saline Anti D
  - One Stage Albumin Technique
  - Two Stage Albumin technique
  - Coomb's antihuman Globulin technique
- Coomb's Test.
  - Direct Coombs
  - Indirect Coombs
- Donor Screening and Selection.
  - Identification
  - Recording
  - Haemoglobin estimation
  - Relevant Medical History of the Donor
  - Grouping and Typing of Donor's Blood
- Drawing of Blood.
  - Asepsis
  - Reassurance
  - Vein Puncture re and Collection
  - Care of Donor
- Blood Storage.
  - Anticoagulants preparation
  - Recording the details and storage of Blood
  - Maintenance and cleaning of various equipments used in Blood Bank.

## ➤ Laboratory Management and Ethics

- Role of the Laboratory in the Health Care Delivery System :
  - General
  - Human Health & Diseases.
    - Types of Diseases
    - Process of Diagnosis
    - Laboratory at different levels
    - Duties and responsibilities of Laboratory Personnel
- Laboratory Service in the Health Care Delivery System in India :
  - Laboratory Service in India
  - The Health Administration System in India
    - At the National Level\
    - At the State Level
    - At the District Level
    - At the Village Level
    - Voluntary Health Organisation in India
- Laboratory Planning :
  - General Principals
  - Laboratory Goals
  - Operational Data
    - Market Potential
    - Hospital / Laboratory relatives
    - Competitions
    - Laboratory Trends
    - Planning at different levels
    - Guiding Principles for planning Hospital laboratory Services :
    - Factors
    - Guiding Principles for Planning
    - Functional Criteria
    - Operational Demnad
    - Sections of a Hospital Laboratory
    - Common Area
    - Design Aspect
    - Space requirement.

 Planning for a basic health Laboratory.
- Laboratory organization (Laboratory Management Techniques) :
  - General Principles
  - Components and Functions of a laboratory
  - Staffing the Laboratory
  - Job descriptions
  - Job specification
  - Work Schedule
  - Personnel re-arrangement and work load assessment.

- Care of Laboratory Glassware, Equipments and Instruments and Chemicals etc :
  - General Principles
  - Care and Cleaning of Glassware
  - Making simple glass wares in Laboratory
  - Care of equipments, Instruments and apparatus etc
  - Laboratory Chemicals their proper use and care
  - Labelling.
- Specimen Handling :
  - General Principles
  - Collection Techniques and containers for specimen
  - Types of specimens
  - Specimens entry
  - Specimens transfer and distribution and re-assignment
  - Specimens disposal
  - Specimens preservation.
- Laboratory Safety :
  - General Principles
  - Laboratory Hazards.
  - Safety Programmes
  - First Aid

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# ANNEXURE "M"

## SYLLABUS

### ➤ Anatomy and Physiology

- UNIT-1 Introduction to anatomical terms
- UNIT-II Organization of body cells tissues .organs. systems membranes and glands
- UNIT-III Skeletal system
- UNIT –IV Muscular system
- UNIT-V Cardio-vascular system
- UNIT-VI Respiratory system
- UNIT-VII Digestive system
- UNIT-VIII Excretory system
- UNIT-IX Nervous system
- UNIT-X Endocrine system
- UNIT-XI Sense organs
- UNIT –XII Reproductive system

### ➤ Community Health Nursing - I

- Unit- I Introduction to community Health and community Health Nursing
- Unit-II community health nursing process
- Unit- III Health Assessment
- Unit- IV Principles of Epidemiology and Epidemiological methods
- Unit- V Family Health Nursing care
- Unit-VI Family health care settings
- Unit- VII Referral systems
- Unit – VIII Records and Reports
- Unit-IX Minor Ailments

### ➤ Fundamentals of Nursing

- Unit-I Introduction to Nursing
- Unit – II Nursing care of the patient / Client
  - Bed and Bed Making
  - Maintenance of therapeutic environment Temperature, Light, noise and humidity. Psycho Social Environment
  - Nursing Process and Nursing Care Plan
  - Discharging a patient
- Unit – III Basic Nursing Care and Needs of the patient
  - Nutritional needs.
  - Elimination needs
  - Safety needs
  - Activity and Exercises
  - Physical Comforts
  - Moving, shifting and Lifting of patient
- Unit – IV Assessment of patient / Client

- Physical Assessment
- Physiological Assessment
- Unit – V Therapeutic Nursing Care and Procedures Asepsis
  - Care and Sterilization of:
  - Care of Respiratory System
  - Care of Gastro Intestinal Tract
  - Care of Genito Urinary System
  - Care of Skin and Mucous Membranes
- Unit – IV Basic Needs and Care in Special conditions
  - Dying patient
  - Unit – VII Introduction to Pharmacology

## ➤ Nutrition

- Unit – I Introduction
- Unit – II Classification of food

## ➤ Medical Surgical Nursing - I

- Unit – I Introduction
- Unit – II Nursing Assessment
- Unit – III Patho Physiological Mechanism of Disease
- Unit – IV Altered Immune Response
- Unit – V Clinical Pharmacology
- Unit – VI Nurse's role in Management of Fluids, Electrolyte and Acid Based Balance
- Unit – VII Management of patients in pain
- Unit – VIII Operation Theatre Technique Physical Environment
  - Theatre Technique
  - Preparation of Theatre equipment & Supplies
- Unit – IX Management of patient undergoing surgery
  - Intra operative Management
  - Post- operative management – Immediate and Routine
- Unit – X Nursing management of patient with impaired respiratory function and gaseous exchange
- Unit – XI Nursing Management of Patients with Digestive and Gastro-Intestinal Disorders
- Unit – XII Nursing Management of Patients with Metabolic and Endocrine Disorders
- Unit – XIII Nursing Management of patients with renal and urinary disorders
- Unit – XIV Nursing Management of patient with Neurological disorders
- Unit – XV Nursing Management of patients with disorders of connective tissue collagen disorders.
- Unit – XVI Nursing Management of the Elderly
- Unit – XVII Emergency Management

## ➤ Paediatric Nursing

- Unit – I Introduction
- Unit – II The Newborn
- Unit – III The Healthy Child
  - The Infant
  - Health Promotion during infancy
  - The Toddler

- The Pre-Schooler
- The School age
- The Adolescent
- Unit – IV The Sick Child
  - Nursing interventions adaptations in nursing care of sick child
- Unit – V Behavioral Disorders and common Health Problems during Childhood, their prevention, Medical and Nursing Management.
  - Infancy
  - Early Childhood
  - Middle Childhood
  - Later Childhood
- Unit – VI Children with congenital Defects / Mal formations
- Unit – VII Children with various disorders and diseases
- Unit – VIII Welfare of Children

## ➤ Mental Health and Psychiatric Nursing

- Unit – I Introduction
- Unit – II History of Psychiatry
- Unit – III Mental Health Assessment
- Unit – IV Community Mental Health
- Unit – V Psychiatric Nursing Management
- Unit – VI Mental disorders and Nursing Interventions.
  - Functional Mental Disorders
  - Definition, etiology, signs, symptoms, medical and nursing management of:
- Unit – VII Bio-Psychosocial Therapies
  - Psychopharmacology
  - Somatic therapy
- Unit – VIII Forensic Psychiatry / Legal Aspects.
- Unit – IX Psychiatric Emergencies and Crisis Intervention

## ➤ Medical Surgical Nursing - 2

- Unit -1 oncology nursing
  - Nursing management of patients receiving:
- Unit-2 Nursing Management of patients with diseases of male genitor-urinary tract.
- Unit-3 Nursing management of patients with disorders of breast.
- Unit -4 Nursing management of patients with diseases and disorders of integumentary system.
- Unit -5 Nursing management of patients with ophthalmic disorders and diseases
  - Hospital cornea retrieval:
- Unit -6 Nursing management of patients with disorders and diseases of ear, nose, and throat.
- Unit -7 Nursing management of patients with cardio vascular, circulatory and haematological disorders.
- Unit -8 Nursing management of patient with communicable diseases
  - Diseases caused by:
- Unit – 9 Nursing Management of patients with sexually transmitted diseases
- Unit – 10 Nursing Management of patients with Musculo-skeletal Disorders and diseases.
- Unit – 11 Emergency and disaster Nursing.

## ➤ Community Health Nursing - 2

- **Unit – I Health system in India (Organizational set-up)**
- **Unit – II Health care services in India**
- **Unit – III Health Planning in India**
- **Unit – IV Specialized community Health Services and nurse's role**
- **Unit – V Nurse's Role in National Health Programmes**
- **Unit – VI Demography and family welfare demography**
  - **Family Welfare**
- **Unit – VII Health Team**
  - **Role of nursing personnel at various levels**
- **Unit – VIII Vital Health Statistics**

## ➤ Midwifery

- **Unit – I Introduction**
- **Unit – II Reproductive system**
- **Unit – III Embryology and foetal development**
- **Unit - IV Nursing Management of Pregnant Women**
  - **Investigations.**
- **Unit – V Nursing Management of women in Labour**
  - **A. First Stage of Labour**
  - **B. Second Stage of Labour**
  - **C. Third Stage of Labour**
  - **D. Conduct of Home Delivery**
- **Unit – VI Nursing Management of Baby at birth**
- **Unit – VII Nursing management of Mother during puerperium**
- **Unit – VIII Complications of pregnancy and its management**
- **Unit – IX High Risk pregnancy and its management**
  - **Ostomalacia, Sexually Transmitted Diseases, AIDS.**
- **Unit – X High Risk Labour and its management**
- **Unit – XI Complications of Puerperium and its management**
- **Unit – XII Obstetric operations**
- **Unit – XIII Drugs used in obstetrics**
- **Unit – XIV Ethical and legal aspects related to Midwifery and Gynecological Nursing.**
  - **Clinical Experience**

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