UT OF JAMMU & KASHMIR
GOVT MEDICAL COLLEGE, UDHAMPUR

SUBJECT : CONDUCT OF SCREENING TEST FOR THE POSTS ADVERTISED VIDE ADVERTISEMENT NOTIFICATION REFERENCE NO. 08 of 2023 dated 04.05.2023 ISSUED UNDER ENDORSEMENT NO. GMC/UDH/2023-24/134 dated 04.05.2023 READ WITH NOTIFICATION NO 17 OF 2023 DATED 12.08.2023 ISSUED UNDER ENDORSEMENT NO GMC/UDH/2023-24/1060 DATED 12.08.2023 REGARDING THE RULES AND REGULATIONS AND MODUS OPERANDI TO CONDUCT THE SCREENING TEST , SHORTLY CONDUCT OF THE SCREENING TEST REGARDING.

CIRCULAR

Whereas the Principal Govt Medical College , Udhampur vide aforementioned notification no. & date invited online application from the eligible candidates for participating in the selection process for the various non -Gazzated posts in various disciplines interms of SO 364 dated 27.11.2020 purely on the academic arrangement basis.

Whereas the last date for the submission of the online application complete in all aspects has been fixed as 20.05.2023.

Whereas various representations from the candidates has been received regarding the eligibility criteria, reservation, screening tests etc.

Whereas the matter has been examined by the Recruitment Committee of the GMC, Udhampur regarding the representations for the various posts and finally decided to allow all the candidates who has applied online for the posts to appear in the screening test/ Written test which shall be conducted shortly by the Institution and the candidates are advised to visit the official website of the institution regularly in their own interest.

The detailed terms and conditions with regard to eligibility , educational qualification, domicile , reservation etc and modus operandi to conduct the screening test already been published in the Public Domain vide aforequoted reference also.

Further the appointment of the candidates selected through this process shall be governed by rules , regulations as envisaged under SO 364 dated 27.11.2020 purely on the academic arrangement basis and the candidate shall not confer any right to claim for permanent posts for the reasons whatsoever in future .

The candidates who are declared qualified in the Screening test by the committee , will be required to produce relevant Certificates such as Mark sheets,

Provisional Certificates, diplomas, hard copy of application or any other document as deem appropriate by the Selection Committee, etc. in original as proof of having acquired the prescribed educational qualification on or before the cutoff date fixed and the date and timings for verification shall be notify separately in our official website www.gmcudhampur.in failing which the candidature of such candidates shall be cancelled by the Committee.

Candidates may note that their candidature will remain provisional till the genuineness of their documents relating to educational qualification is verified by the Selection Committee.

SCHEME OF SCREENING TEST :

a.) The Examination will consist of Objective Type, Multiple choice Questions. The questions will be set in English Language only.

b.) There will be Negative Marking of 0.25 marks for each wrong answer.

c.) Marks scored by candidates in written test will be normalized to determine final merit and cut-off marks.

Syllabus for the various Non-Gazzatted Technical Posts has also been uploaded with this CIRCULAR in our Official Website.

The Committee will not undertake detailed scrutiny of applications for the eligibility and other aspects at the time of written examination and, therefore, candidature will be accepted only provisionally. The candidates are advised to go through the requirements of educational qualification, age, etc and satisfy themselves that they are eligible for the post. Copies of supporting documents will be sought at the time of Document Verification. When scrutiny is undertaken, if any claim made in the application is not found substantiated or correct, the candidature will be cancelled, Criminal Proceedings under law shall be initiated, or any other action as may be deemed appropriate by the Committee , shall be taken.

The detaiis of screening test will be uploaded on our official website i.e. **www.gmcudhampur.in**. screening test detail/Roll Number slips will not be issued by post to the candidates. Therefore, candidates are advised to visit the official website

regularly for updates and information about the screening test & Admit cards. Information about the screening test indicating the Time Table and Admit cards/Roll no. for the candidates will be uploaded on the official website about 1-2 days before the date of examination. If any candidate does not find his/ her Roll Number on our official website , he/ she must immediately contact the office during the working Hours, with proof of having submitted his/ her application. Failure to do so will automatically deprive him/ her of any claim for consideration.

In addition to the Roll Number Card/Slip, it is mandatory to carry at least two passport size recent colour photographs, Original valid Photo-ID proof such as: i. Aadhaar Card/ Printout of E-Aadhaar, ii. Voter's ID Card, iii.Driving License, iv.PAN Card, v. Passport, vi.School/ College/University I-Card, vii. Employer ID Card (Govt./ PSU/ Private), etc.

If any candidate is found indulging in any irregularity/ misconduct/ malpractice/indiscipline at any stage of selection process, such candidate shall be debarred from the examinations conducted by Govt Medical College , Udhampur for such period as may be deemed appropriate, and apart from cancellation of candidature for the instant examination any other action as would be necessary & expedient, shall be taken.

The Selection Committee, for the purposes of ensuring integrity, fairness and transparency in the Examination process shall be well within its rights & duties, to take steps as necessary or issue instructions as deemed appropriate, at any stage of selection process, and all such steps/instructions shall be deemed to have been taken/given in furtherance of its mandate, as enshrined in the relevant laws/rules/regulations.

The decision of the Selection Committee in all matters relating to eligibility, acceptance or rejection of the applications, penalty for false information, mode of selection, conduct of examination(s), allotment of examination centres and preparation of merit list, debarment for indulging in malpractices would be final and binding on the candidates and no enquiry/ correspondence will be entertained in this regard.

Therefore Through this missive, it is impressed upon all the Candidates who have applied for the various Non-Gazzated Technical Posts that shortly the institution is going to conduct the Screening Test and are advised to visit the official website

www.gmcudhampur.in of the institution regularly for update regarding the screening test etc.

Principal
Chairman Selection Committee
GMC, Udhampur

NO:GMC/UDH/2023-24/ 4838-44
Dated : 6/01/2024.

Copy to:

1. **Administrative Secretary, Health & Medical Education Department for information.**
2. **Director Coordination (New Medical Colleges & Govt Nursing Colleges), Jammu for Information.**
3. **Members of the Selection Committee , GMC Udhampur for information and necessary action.**
4. **Registrar, J&K ParaMedical & Nursing Council , Jammu for information.**
5. **All candidates .**
6. **I/C website.**
7. Administrative officer, GMC udhampur .

(Annexure - A)

SYLLABUS

Audiometry Technician

➢ Audilogy

✓ 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 / saggital / 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 harmone, functions of thyroid hormone, growth harmone, 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

(Annexure - B)

SYLLABUS

Laboratory Assistant/Technical Lab Technician Assistant

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 & Mouce

✓ **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-congulants

✓ 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.
- Skeletel System, Identification of Bones and Joints

- Demonstration of Interior of Thorox with organs in Situ.
  - Respiratory System and Pleurae
  - Heart and Blood Vessels

- Demonstration and Identification of various organs with in abdomen
  - Liver and Gall Bladder
  - Peritoneum stomach and Intestine.
- Male Genital System
- Female Genital System
- Central Nervous System, Spinal Cord and Site of Lumber 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 CCitrate
- Haematocrit
- Identification of ruled area in Neubauer's Chamber RBC and WBC Pipettes and Wintrobes 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, Spetrophtometer, Flamephotometer, Flurimeter 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 Acidites.
- Carbohydrate – Metabolism – elementary aspects, definition of Glucolysis, Glycogenolysis Hormonal regulation of Blood Sugar Diabetes-Mellitus – Ketosis, Gcosuria, Renal Glycosuria, Pentosuria.
- Metabolism of Lipids – elementary aspects, Triglycerides, Cholestrol, 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.
- Harmones – 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, Fibrignogen & AG ratio.
- Serum Electrolytes.
    - Determination of Na*, K* and Cl.
    - Determination of inorganic Phosphorus
    - Determination of Calcium.
- Serum Enzymes :
    - Determination of transminases (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.

- Kidnet 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, Anacrobic jar Vaccum Pump, Media Pouring Chamber, refrigerator, Centrifuge

Microscope.

- Principal, Operation, Care and Use of Microscope

Sterilization and Disinfection.

- Classification and Genaral principles of Sterilization. Physical Chemical and Mechanical Methods Disposal of contaminated media, Syringes, Glossware, 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 meida 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.
  - Gam positive and Gram Negative co….Staphylo…..Penumococcus Neisseria (in brief)

- **Gram negative Bacilli :**
  - Salmonella, Shigella, E.Coli, Klebsiella, Protein, Pseudomonas Vibro cholera Haemophilus (In brief)
- **Gram Positive Bacilli**
  - **Aerobic**
    - Corynebacterium diphtheria
    - Mycobacterium tubercoulosis and Mycobacterium leprae.
  - **Anacrobic bacilli – Clostridia**
- **Antibiotic Sensitivity test** – Principles and methods of determination of sensitivity.
  - Candida, Asperigillus. 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. Hystolytica, E, Coli Giardia. Trichomonas. Plasmodia Leishmania, Hook worn Round worn, Whip worm. Tape worm, Echinococcus granulosus, granulosus, Dracunculus, Wucheraria 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 Loding of materials in Autoclace, 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 referenc laboratory for tests.
- Gram Stain Z.N Stain Albert's Stain, Capsule Staining
- Incolution 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 feeal 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
- Antiecoagulants
- 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.
    - Cytolofical 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
- Decalificatation
    - 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 Handeling :
  - 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

(Annexure - C)

SYLLABUS

Operation Theatre and Technology

➢ 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

✓ Breast Procedures

- Beast Biopsy
- Mastectomy

✓ Abdominal Extraintestinal Surgery

- Abdominal laprotomy
- Abdominal Hernlography
- Cholecystectomy
- Drainage of Pancreatic Cyst (Pseudocyst)
- Pancreaticoduodectomy (Whipples procedure)
- Pancreatectomy
- Dranage of Abscess (es) in the region of liver □ Hepatic Resection
- Spleenectomy.

➢ Gastriubtestinal Surgery

- Esopghagoscopy

Mard

- Gastroscopy
- Colonoscopy
- Sigmoidoscopy
- Vagotomy and Pyloroplasty
- Gastrostomy □ Gastrectomy
- Small Bowel Resection
- Cutaneous illeostomy
- Appendectomy
- Colostomy
- Closure of colostomy
- Right Hemincolectomy
- Transverse Coplectomy
- Anterlor Resection of the Sigmold Colon and Rectum
- Haemorrhoidectomy
- Pilonidal Cystectomy and Sinusectomy
- 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 Currettage
- 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
- Spermatocolectomy
- Orchectomy
- Gystoscopy
- Cystosdopy
- Transurethral Resetion of the Prostate
- (TURP) and /or Lesions of the Bladder or Bladder Nech (TURB)
- Open Prostatectomy
- Nephrectomy
- Upper Tract Urolithotomy(Ureterolithotomy, Pheloothotomy, Nephrolithotomy) cutaneous vresterstomy
- Llegal conduit
- Extracproeal shock wave Lithotrpsy (ESWL)
- Ultrasonic Lithortripsy
- Electrohydraulic Lithotripsy

✓ Thoracic Procedures

- Bronchosopy
- Mediastioscopy
- Segmental Resection of the Lung
- Wedge Resection of the Lung
- Pulmonarty 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 Abneurysmectomy, Abdominal Aortic Endaertectomy) with Astroilliac Graft
- Femoropopliteal Bypass
- Greater Saphenous vein Ligation and Stripping
- Portasystemic Shunt
- Artheriovenous Shunt
- Arteriovenous Fistula
- Cardiac procedures
- BY pass Surgery(Different Procedures)

✓ Orthopaedic Surgery

- Open reduction of a carpal Bone Fracture

- Excision of a Gaglion
- Carpal tunnel Release
- Open rduction of the Humerus
- Open reduction of the Radius and /or Ulna
- Open reduction of an Olecranon process Fracture
- Repair of recurrent Anterior Dislocationm of the Shoulder
- Open reduction of Fracture of the Humeral Head (including Humeral Head Prosthesis)
- Internal Fixation of the Hip
- Femoral head Prosthethic Replacement
- Total Hip replacement
- Openreduction 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 Defrmity with interphalabngeal Fusion
- Metarsal Head Resection
- Procedure for correction of scoliosis
- Amputation of lower Extremity

✓ Neurological Surgery

- Craniotomy
- Cranioplasty
- Transphenoidal Hypophysectomy
- Ventricular Shunts
- Laminectomy
- Excision of a Cervical Intervetebral Disc with fusion, AntoriorApproach.

✓ 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
- Blepgharoplasty
- Rhytidectomy

- Dermabrasion
- Otoplasty
- Repair of Syndactyly
- Digital Flexor Tendon repair
- Peripheral Nerve repair
- Palmar Fascoectomy
- Reduction Mammoplasty
- Abdominoplasty /Abdominal Liposuction
- Liposuction

✓ Otorhinolarynogologic (ENT) Surgery

- Myringotomy
- Mastoidectomy
- Tympanoplasty
- Stapedectomy
- Submucous Resection of the Nasal Septum(SMR) / Septoplasty
- Intranasal Antrosstomy / Intranasal Fenestration of the Nasoantal 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 Margyinal Rsection of the Mandible)

✓ Opthalmic Surgery

- General Information
- Excision of a Chalazion
- Reduction of Nasal Fracture
- Reduction of Mandibular Fracture
- Reduction of a Zygomatic Fracture
- Open reduction of an Orbital Floor Fracture
- Rhinoplasty
- Mentoplasty Augmentation
- Blepgharoplasty
- Rhytidectomy
- Dermabrasion
- Otoplasty

- Repair of Syndactyly
- Digital Flexor Tendon repair
- Peripheral Nerve repair
- Palmar Fascoectomy
- Reduction Mammoplasty
- Abdominoplasty /Abdominal Liposuction
- Liposuction

✓ Otorhinolarynogologic (ENT) Surgery

- Myringotomy
- Mastoidectomy
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- Laryngoscopy
- Traheostomy
- Excision of the Submaxillary (Submandibular Gland)
- Parotidectomy
- Laryngectomy
- Radial Neck Dissection
- Excision of lesions of the oral cavity
- (Partial Glossectomy with Margyinal Rsection of the Mandible)

✓ Opthalmic Surgery

- General Information
- Excision of a Chalazion
  - 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 Hazzards

✓ Preparation of Instruments Tray

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

✓ Gynaecologic and Obstetric Trays

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

✓ Genitourinary Trays :

- Vasectomy tray
- Open Prostatectomy
- Kidney tray

✓ Thoracic Trays :

Mark

- 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 Arthtotomy tray
- Knee or Ankle Anthroscopy 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
- Tonsiliectomy and Adenoidectomy tray
- Tracheostomy tray
- Antral Puncture tray

✓ **Opthalmic Trays :-**

- Basic Eye procedures tray
- Eyelid and Conjunctional procedures tray
- Basic Eye Muscle procedures tray
- Cataract Extractionand 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.

Syllabus

Clinical Psychologist

- Theoretical Foundations of Psychology.
- Experimental Psychology
- Social Psychology
- Research Methodology in Psychology

- Cognitive Psychology.
- Bio-Psychology
- Psychology of Personality.
- Statistics in Psychology

- Psychopathology
- Psychometrics
- Health Psychology
- Organisational Psychology

- Clinical Psychology
- Developmental Psychology
- Educational Psychology
- Counselling Psychology
- Rehabilitation Psychology
- Industrial Psychology

(Annexure - E)

SYLLABUS

Junior Staff Nurse

Anatomy and Physiology

- UNIT-I 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 Treact
  - 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 Theater 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 ager
  - 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 receving:
- 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 opthalamic 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 haemotological 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
  - Ostemalacia, 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

SYLLABUS

Radiographic Technician

➢ 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, Capilary, 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 Reprodutive 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 filteration Reabsorption and secretion.

✓ **Nervous System:**

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

✓ **Lymphatic System:**

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

✓ **Endocrine system –**

Definition, Pituitary Gland, Pineal gland.Thymus Gland Adreneal 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 & Archimedics principle.

✓ **Heat -**

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

✓ **Light -**

Rectilinear propogation, Photometery reflection lawas. 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, impedence, 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 comption effect and pair production) luminescent effect, photographic 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 (Phosphores cence and fluorescence) construction of screens. Type of phosphors and pigments film screen contact, speed of screens-slow parfast care of intensifying screens . Intensification factors numeral 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 Rinsisng 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 an causes of radiation and photographic artifacts, factors affecting the quality control of radiograph.

• Radiograpghic General Procedures

- Intorduction- The Radiographic image (image formation, magnification image Distortion, Image, sharpness, Image contrast) Ex posure factor and Anatomical Terminology.

✓ **Skeletal System-**

Upper Limb- Procedure for thumb, fingers, meta carpals, hand corpometacarpel joints, wrist joint, carpo-radio-ulpar joint, forearm, elbow joint, arm, special views for scaphoid bone, olecranon process , supra condylar prljection in various type ofinjured patients.

- **Lower limb-** Procedure for toes, meta tarsalls, complete foot, trasoancaneal, talo calcaneal joint, lege with ankle joint legewith knee jointm knee joint, thigh with hip joint.

- **Shoulder Girdle and Bony thorax-** Procedures for scapula calvicle 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 , dorsalsspine, dorso-lumbar spine, and spondolysis.
- **Pelvic Girdle and Hip Joints :** - Procedure for whole pelvis, ileum, ischium and public bones, sacro – iliacjoint 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 platting.
- **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 cephalometery, 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 teleradiography, chest in pregnancy. High Kilovolatage 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 performation 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, Gastrigraffin 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 catherization technique guidewires, Catheters, General complication of catheter technique.

- **Gngiography peripheral Angiograms -** Angiogram for upper and lower limbs
  - **Central Angiogram** :- Cardiac catherization, 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, Myelegraphy, 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, Manula 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 Trav 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 cardiacrhythum, 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 complexex (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 tobe recorded in a normal ECG.

✓ Abnormal Electrocardiogram -

- Abnormal P-wave, Interventicular conduction defect, RBBB (Right bundle Branch Block) LBB (Left Bundle Branch Block). Hypertrophy, RVH (Right Ventricular Hypertrophy, LVH (Left Venticular Hypertrophy), WPH (Wolf Parkinson white Syndrome.) Bilateral Bundle Branch Book. 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 Posteriorand 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 Hypokalemala, Hyper and Hypo Calcemia. Phenothiazines. Anthro Cyclines, Cerebro Vascular Accidents (CVA), Hypo and Hyper thermia, pericarditis, Myucarditis. Heart Trauma. Pericardial effusion. Malignancy of heart. Cardionyopathies, Electrical Alternans, Negative V-Wave, Liquid Protein diet Anaemia Etc.

✓ Disorders of Cardiac Rhythum -

- Disbalance of impulse formation at SA node, disturbance of impulse conduction, Secondary disorders of rhythum, Physiology of cardia rhythum, automaticity. A Vnode, Sinus rhythum, Sinus tachycardia, Sinus brady cardia, Sinus Arrythmia, Sinoatrial block, partial SA block, complete SA block, causes of exit block, Atrial Extrasystoles, Bocked Atrial extrasystole, Wandering Pacemaker, Praroxysmal Atrial tachycardia (PAT) Chaotic atrial rthythm, Atrial Flutter, Atrial Fibrillation, Supraventricular tachycardia (SVT.) Ventricular tachycardia (VT) Ventricular fibrillation. Sick sines syndrome etc.

✓ ECG as a Clue to Clinical Diagnosis -

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