

**ANDHRA PRADESH PARA MEDICAL  
BOARD**

**HYDERABAD**

**(Established Under the Andhra Pradesh Para Medical Board Act,  
2006)**

**(A.P. Act No.38 of 2006)**

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**Syllabus for**

**DIPLOMA IN MEDICAL STERILIZATION  
MANAGEMENT & OPERATION THEATRE TECHNICIAN  
COURSE  
(TWO YEARS COURSE)**

**B.N.S. Kumar  
Secretary**

In view of representation from the Faculty the Syllabus for the 1<sup>st</sup> year in all Para medical courses is modified accordingly and kept on website.

| <b>DIPLOMA IN MEDICAL STERILIZATION MANAGEMENT &amp; OPERATION THEATRE TECHNICIAN COURSE<br/>(TWO YEARS COURSE)</b> |   |
|---|---|
| <b>Syllabus for First Year</b>  |   |
| <b>Paper-I</b>  | <b><u>BASIC HUMAN SCIENCES</u></b><br><br>A) Basics of Anatomy<br>B) Basics of Physiology<br>C) Basics of Biochemistry<br>D) Basics of Bio-statistics   |
| <b>Paper-II</b>   | A) Basics of Pathology<br>B) Basics of Blood Banking<br>C) Basics of Microbiology<br>D) Basics of Central Sterilization Services.   |
| <b>Paper-III</b>  | A) Hospital Awareness<br>B) Familiarization of different tables/tubes in surgical dept, Surgical Awareness, preparation of patient for surgery.<br>C) Patient related services.<br>D) Communication and Computer Skills, Audio & Visual Aids. |

**DIPLOMA IN MEDICAL STERILIZATION MANAGEMENT &  
OPERATION THEATRE TECHNICIAN COURSE  
(TWO YEARS COURSE)**

## **Syllabus for Second Year**

|                  |  |
|------------------|--|
| <b>Paper-I</b>   | <p>A) Anatomy, Physiology, Definitions &amp; Terminologies Pathology &amp; Microbiology , Definitions, Terminologies Skeletal System, Structure and function of Muscular System, Central Nervous System.</p> <p>B) Sense Organs, Respiratory System, Circulatory System, Digestive System, Excretory System, Endocrine System, Reproduction System, Integument System, Fluid &amp; electrolyte Mechanisms .</p> <p>C) Carbolization of OT, Introduction to OT, Operation Theatre Techniques, Major Investigations in OT. Sterilization of equipment &amp; Instruments gowns &amp; Dropes, Sterile techniques and their application,.</p> <p>D) Patient Related services, preparation of patient for surgery.</p> |
| <b>Paper-II</b>  | <p>A) Pharmacology,</p> <p>B) Respiration, Sources of infection</p> <p>C) Intravenous Therapy, Oxygen Therapy.</p> <p>D) Anesthesiology Assistance, Prevention of Pressure Sore, Parasitology.</p>   |
| <b>Paper-III</b> | <p>A) Bio-Medical Sciences, Physical Examination &amp; Cardiac Procedures.</p> <p>B) Digestive, Neurological, Urinary, Special Area Learning.</p> <p>C) Biomedical Waste disposal.</p> <p>D) Instrumentation Study, Instrument Measurement &amp; Critical Care equipment.</p>  |

# 1<sup>st</sup> YEAR

## PAPER-I

### Basics of Anatomy & Physiology

#### **Basics of Anatomy**

1. Introduction to Human Anatomy
2. Cell- Tissues Properties, Different Tissues
3. Digestive System & Hepatobiliary System
4. Respiratory System
5. Cardio Vascular System
6. Lymphatic System
7. Bones and Joints
8. Nervous System
9. Endocrine System
10. Sense Organs
11. Excretory System
12. Reproductive System

#### **Basics of Physiology**

1. Introduction to Human Physiology
2. Blood
3. Cardio Vascular System
4. Lymphoid System
5. Digestive System
6. Respiratory System
7. Nervous System
8. Endocrine System
9. Excretory System
10. Reproductive System
11. Sense Organs

## Basics of Bio – Chemistry

1. Introduction to Basics of Bio-chemistry including code of ethics for Medical Lab Technicians and Medical Lab Organization.
2. Reception, Registration and bio-chemical parameters investigated.
3. Glassware and plastic ware used in a bio-chemical laboratory.
  - a. **Glassware:**
    - 1) Types of glass and composition.
    - 2) Types of glassware used, their identification, application & uses.
    - 3) Cleaning, drying, maintenance and storage of glassware.
  - b. **Plastic ware: Brief outline**
4. Instrumental methods of Bio-chemical analysis.
  - a. **Colorimetry :**

Visual and photoelectric methods, instrumentation, principle & laws involved construction, operation, care and maintenance, applications.
  - b. **Spectrophotometry**

Principle and theory, types, construction, & applications
5. Basic lab operations like
  - a. **Separation of solids from liquids**
    1. Centrifugation: Principle, Different types of centrifuges care and maintenance, applications.
    2. Filtration using funnel.
    3. Weighing : Different types of balances used, care and maintenance.
    4. Evaporation
    5. Distillation
    6. Refluxing
    7. Drying different salts and dessication.

6. Water Chemicals and related substances
  - a. Purity of chemicals
  - b. Corrosives
  - c. Hygroscopic Substance
7. Prevention, Safety and first aid in lab accidents.
8. Collection of Specimens
  - a. **Blood:** Types of Specimens, Collection, Precautions during collection processing and preservation.
  - b. **Urine:** Types of Specimens, Collection, Precautions during collection, Processing and Preservation.
9. Urine biochemical parameters.
10. Units of measurements
11. **Solutions** : Types based on solute and solvent, Types based on method of expressing concentration, calculations.
12. **Carbohydrates:** Definitions, Biological importance, Acid value, iodine value, saponification value.
13. Amino acids and Proteins Definition, Biological importance, Classification, Qualitative tests.
14. **Diagonistic tests** : Blood sugar, Glucose tolerance test, Blood urea, Serumuric acid, Serum creatinine.
15. **Vitamins and Minerals**
  - a. **Vitamins:**  
Water Soluble vitamins, Fat Soluble vitamins, Sources, Daily requirements, Deficiency diseases.
  - b. **Minerals :**  
Sources, Daily requirements, Deficiency diseases.

# Paper-II

## Basics of Pathology

### Introduction to Pathology in brief

1. Urine – Analysis – Physical Examination – specific gravity PH, reaction, colour.  
Chemical Examination – Sugar Albumin, bile salts, bile Pigments etc.  
Microscopic, Sediment for RBC, WBC, Epitheleal cells, casts, crystals, parasites.  
Preparation of Reagents, procedure and principle of tests.
2. **Sputum Analysis** – Physical Examination, Preparation and staining smear for Microscopic Examination.
3. **Semen Analysis** – Physical Examination Microscopy – counting, motility, staining, Morphology, abnormal and normal forms.
4. **Body Fluids** – Differential count of Peritoneal, pericardial, pleural fluids and CSF, charging chamber, Identifying and counting the cells.

# Basics of Microbiology

## I. Introduction to Microbiology in brief

Definition,  
History

## II. Microscopy

- a) Principle working and maintenance of compound Microscope.
- b) Principle of Fluorescent microscope, Electron Microscope, Dark Ground Microscope.

### **History**

**Types of Microscope:** (a) Light Microscope, (b) DGI, (c) Fluorescent, (d) Phase contrast.

**(e) Electron Microscope :** a). Transmission, b) Scanning, Principles of operational mechanisms of various types of Microscopes.

## III. Sterilization and disinfection – classification and Methods of sterilization.

### **Sterilization: Definition, types and principles of sterilization methods:**

(a) Heat (dry heat, moist heat with special reference to autoclave, (b) Radiation, (c) Filtration, efficiency testing to various sterilizers.

### **Antiseptics and Disinfectants :**

Definition, types and properties, mode of action, uses of various disinfectants, precautions while using the disinfectants, qualities of a good disinfectants, testing efficiency of various disinfectants.



- 1) Principle and Methods of sterilization by heat
  - a) By Dry Heat, flaming, Red Heat, Hot air oven, incineration.
  - b) By Moist Heat-pasteurization, Inspissation, tyndalisation, autoclave.

- 2) Filtration Methods

- 3) Ionising Radiation – Disinfection, Mode of action and uses of important chemical disinfectants – Phenol and Phenolic compounds, alcohols, halogens, dyes and acids and alkalis.

- 4) Gaseous Methods of sterilization.

- IV. Cleaning, drying & Sterilization of Glassware disposal of contaminated material i.e. clinical infective material inoculated culture media. Handling and Disposal of Biomedical waste.
- V. **Biomedical waste management in a Microbiology Laboratory** : types of the waste generated, segregation, treatment, disposal.
- VI. Morphology and classification of Bacteria Sp. of cell, capsule, flagella, spore, Anaerobic Methods of cultivation of Bacteria.

## Paper-III

### **A. Hospital Awareness**

A brief idea of hospital as an organization management different units of a hospital effective communication skills, communication channel

Maintenance of records  
Effective leadership  
General patient care  
Medical terminologies  
Vital signs  
Unit preparation  
Transporting & Transferring patients  
Sterilization Techniques  
Control of infection  
Medication – Oral & parenteral  
Admission – Discharge procedure  
Bandages

Practicals : Posted in ward & taught clinically

### **A. Surgical Department**

Familiarization of different tubes

1. Drainage tube
2. Post Operative Exercises
3. Post OP Management of Patient
4. Shock of Management
5. Changing Surgical Dressing.

1. Preoperative preparation of patient
2. Preanesthetic preparation
3. Assisting in operation
4. Anaesthesia
5. CSSD
  1. Recovery room
  2. Movement of papers
  3. Scheduling of theaters
  4. Supplying of articles
  5. Specific area practices
    - As scrubnurse
    - As circulating nurse

## **Communication and Computer Skills, Audio & Visual Aids.**

### **COMMUNICATION**

Process  
Types of communication  
Strategies for effective Communication  
Barriers of communication

### **SOFT SKILLS**

Presentation with the use of visual aids such as power point  
Conversation  
Extempore speech, usage of effective language for communication of health work.  
Case studies and situational analysis  
Survey and Reporting

### **COMPUTER**

Computer basic  
MS – Office  
MS – Word  
MS – Excel  
MS – Power Point

### **INTERNET CONCEPTS**

Browsing  
Down- Loading  
Use of Slide Projector

# 2<sup>nd</sup> Year

## Paper-I

### **A. Skeletal system**

- (a) Bones – Types
- (b) Joints

#### Muscular System

Names of different muscles and its location

#### Cardio Vascular System

Structure of heart & position

Blood – Composition, clotting & grouping

Blood Vessels – structure & position

Blood pressure & pulse rate

#### Digestive System

Digestive organs – junctions, location

Physiology of digestion

Exocrine glands.

#### Respiratory System

Organs of respiration – location; function

External & Internal Respiration.

### **Anatomy & physiology (part II)**

#### Excretory system

Structure & function of excretory organs

#### Nervous system

Structure of PNS, CNS, ANS

Structure of Neuron & physiology

#### Endocrine system

Site, function of pituitary, thyroid parathyroid, adrenal

Feed back mechanism

Hormones of each glands & their function

#### Sense Organs

Structure & function of Eye, Ear, Nose & skin

#### Reproductive system

Male reproductive Organs, Structure & function

Female reproductive Organs, structure function

**B. Sources of infection** → ingestion

→ Inhalation

→ Contact

→ Mucus membrane

→ Congenital

**Transmission of factors** → Throat, nose, urine wounds,  
discharges.

Practicals ----- Skeletal System----- Identification of bones.

The Basic structure of active micro – organism size, reproduction,  
factor influencing growth pathogenic and non – pathogenic organism  
common diseases caused by different types of Micro – Organism.

**Control and destruction of Mico – organism**

Principles and methods of microbial control

Sterilization – dry heat, moist heat and chemicals

Disinfections

Medical / surgical asepsis

Cross – infection

Control of spread of infection

## Paper-II

### Pharmacology

Drugs : classifications  
Action : Side effect of each drug in each system  
Emergency Drugs  
Antidote

### Pathology

Different pathological condition of each system

### A. Intravenous Therapy

1. S/S of water excess or deficient
2. Types of Fluids
  - a. Isotonic
  - b. Hypotonic
  - c. Hypertonic
3. Blood Transfusion
4. Criteria for selecting a vein suitable for vein puncture
5. Central Venous Pressure
6. Technique of CVP
7. Familiarization of
  - a. Needle or Catheter
  - b. Solution Container
  - c. Infusion tubing
  - d. Adjusting rate of flow of fluid in infusion therapy
  - e. Intravenous push
  - f. Electronic flow – Rate Regulators
  - g. Complication of Intravenous Therapy
  - h. Venipuncture
  - i. Setting up infusion pump

### D. Prevention of Pressure Sore

Managing Pressure Sore  
Transfer Activities  
Crutch Walking

## **E. Respiration**

Respiration – Variation  
Investigation Procedures  
Pulmonary Function Test  
Arterial Blood gas Studies Technique  
Postural Drainage  
Percussion Vibration  
Breathing Exercise  
Transtracheal Aspiration  
Nasotracheal Suctioning  
Sterile Tracheobronchial Suction  
Pt C Water Seal Drainage

Oxygen Therapy -            Canuula  
   Mask  
   Tent  
   Ambubag  
   Ventilators  
   IPPB  
   Endotracheal Tube

Assisting with ventilators / Weaning the patient Nebulizer  
therapy incentive spirometer

Endotracheal – tray setting / Assisting / Procedure

Tracheostomy – tray setting / Assisting / Procedure

Tray setting for major investigative procedure -  
Pericardiocentesis

- Sternal puncture
- Abdominal paracentesis
- Thoracentesis
- Lumbar puncture
- Venesection

## **Parasitology :**

Morphology, life cycle and la diagnosis of E. Histolytica, Giardia,  
Trichomonas, Plasmodium, Leshmania, Ankylostoma,, dudenale –  
Ascaris, Labricoides, Taenia, Echinococcus – Granulosis, Enterobias –  
Vermicularis, Dracunculus medinesis, Wuchareria Bancrofti.

## Paper-III

### 1) Bio Medical

Basic Electricity – Voltage, Current  
Power, Ohms law definition Resistance  
Capacitance, Inductance, Electronic Emission  
Resistors  
Capacitors  
Inductor, Diode  
Transistor  
Semi conductor – types  
Amplifiers  
Fuses – types, selections.

### B. Physical Examination

Vital Signs  
General Inspection  
Eye Examination  
ENT Examination  
Neck  
Cervical Nodes

- External Jugular Vein
- Thyroid
- Axillary Node
- Breast
- Thorax Lungs
- Heart Sound
- Abdomen
- Neurologic Exam

### F. Cardiac Procedures

Cardio pulmonary resuscitation – Cardiac pacing  
ECG monitoring / Bed side monitor

### G. Digestive

Administration of nasogastric tube feeding  
Total parental nutrition – Hyper Alimentat  
Diabetes – Insulin injection, Glucometer

Intermittent  
↗  
↘  
Continuous



## **H. Neurological**

1. Assisting a patient with Paraplegia Hemiplegia/Positioning Exercises.
2. Assisting a patient with increasing intracranial pressure/  
Observation

## **I. Urinary**

Technique for obtaining clean – catch midstream voided specimen Male & Female – Catheterization.  
Intake / Output charting. Recording & Reporting.

## **Specialty**

### **Special areas learning :**

1. Hand washing Techniques
2. Gown techniques
3. Sterilization of Operation theater
4. Setting up of OT
5. Supplying of articles

### Introduction to Immunology

- a. Brief outline of immunity
- b. What are antigens
- c. What are antibodies
- d. Different types of antigen and antibody reaction their application in the diagnosis – agglutination precipitation complement fixation, neutralization, RIA.
- e. Principle and method of ELISA test.

## **PRACTICALS**

1. Monitoring of vital signs, Spo2
2. ABG analysis
3. Types of Anesthesia required for different types of surgeries
4. A regular check of cannula and drains
5. Maintain records and reports
6. Transportation of patient to SICU
7. Suctioning of Endotracheal tube / Tracheostomy tube
8. After care of equipment
9. Mechanical ventilation – Settings and modes