

**ANDHRA PRADESH PARA MEDICAL
BOARD**

HYDERABAD

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

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

Syllabus for

**DIPLOMA IN ANESTHESIA TECHNICIAN COURSE
(TWO YEARS COURSE)**

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

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

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

**DIPLOMA IN ANESTHESIA TECHNICIAN COURSE
(TWO YEARS COURSE)**

Syllabus for Second Year

Paper-I	<ul style="list-style-type: none">A) Anesthesiology ,Types of AnesthesiaB) Pre-operative preparation, Anesthesia Record keepingC) Initiate start up Routine, Introduction to Operation Theatre, Operation Theatre Procedures,D) Cannulization and Blood Transfusion Procedure
Paper-II	<ul style="list-style-type: none">A) Pharmacology & Equipment, Management, Essential Equipment in use, Cardiac Drugs.B) Management of Equipment Essential Equipment in useC) BronchodilatorsD) Diuretics & Fluids (all types)
Paper-III	<ul style="list-style-type: none">A) Cardio vascular Physiology, Cardio Resuscitation.B) ICU Management, Mechanical Ventilation, Monitoring during surgery, Critical Care Monitoring, Reception of Patient,C) Special Monitoring Methods, Electrolyte and Fluid Balance, Other procedures.D) Instrumentation Study, Instrument Measurement & Critical Care equipment of the Courses concerned.

1st 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 Substances
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. **Diagnostic tests** : Blood sugar, Glucose tolerance test, Blood urea, Serum uric 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 disinfections – Phenol and Phenolic compounds, alcohols, halogens, dyes and acids and alkalies.

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
 - a. As scrubnurse
 - b. 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

SECOND YEAR

PAPER – I

ANESTHESIOLOGY

Pre Anesthetic checkup,
Patient Consent & High Risk Consent Pre Medication,
IV Cannulation IV Fluids & Blood Transfusion
Conduct of Anesthesia General / Regional / Local Anesthesia Setting up of Monitoring NIBP, SPO₂, ECG, ETCO₂, NM junction (Peripheral Nerve Stimulator) Invasive Monitoring Techniques Recovery & Post Op Management.

TYPES OF ANESTHESIA

General
Regional
Local
Spinal

PRE-OPERATIVE PREPARATION

Records and forms used in Operation Theatre
Scrutinize checklist of the patient
Right patient, Right site, Right operation
Check Vital Signs

ANESTHESIA RECORD KEEPING

Pre Anesthetic Evaluation Record
Intra Operative Monitoring Record
Post Operative Record for 24 hours
Chronological Preservation of these Records, Statistics, Computerization & Research Orientation.

RECEPTION OF PATIENT

Check name, band and record
View X-Ray chest
View Blood Parameters
Check Skin Preparation at anesthesia site

INITIATE START UP ROUTINE

Check physical condition
Check whether NBO
Give Pre Medication
Transfer to operation table

**CANNULIZATION AND BLOOD
TRANSFUSION PROCESS**

Select appropriate site – prepare site
IV Cannulization Procedure
IV Fluids and their composition
Blood transfusion Procedure

INTRODUCTION TO OPERATION THEATRE

Designing of Operation Theatres, Fumigation of Operation Theatre, Inflow & Outflow of Patients, Placement of Equipment, Care & Sterilization of Equipment, Drugs, Placement & Dilutions, Dosage, Labelling Linen Management (Operation Theatre & Doctors & Nurses)

OPERATION THEATRE PROCEDURES

Surgical Hand Wash
Gowning Gloving Masking, wearing cap, shoes
Pre Anesthetic tray preparation
Time In Time Out

OPERATION THEATRE (DESIGNATION AREAS)

Physical set up of operation theatre
Placement of sterile, unsterile articles and equipment, disinfection of equipments and surfaces.
Fumigation & Sterilization
Linen Management

PAPER-II

PHARMACOLOGY

Pre Medicants, Intravenous Agents, Inhalational Agents, Cardiac Drugs, Diuretics, Bronchodilators, IV Fluids (all types)

Introduction to pharmacology pre medicants, Intravenous agents, Inhalational Agents.

Classification of drugs, Drugs in Anesthesiology
Drug collection – Amount to be infused pediatric drug calculation
Flow rate / drops per min

EQUIPMENT

Central Gas Pipeline System, Boyle's Apparatus, Cylinders, Vapourisers, Intubation Equipment, Monitoring Equipment, Mechanical Ventilators.

CARDIAC DRUGS

Classification
Dose and Route
Action
Side effects & contra indication

BRONCHODILATORS

Classification
Dose and Route
Action
Side effects Contraindications

DIURETICS & FLUIDS (all types)

Classification
Dose and Route
Action
Side effects Contraindications

EQUIPMENT AND ITS HANDLING

Central gas pipeline system
Boyle's / Anesthesia Apparatus
Intubation Equipment
Monitors (invasive & non-invasive) Equipment, Mechanical Ventilators

ESSENTIAL EQUIPMENT IN USE

C- arm
Ventilator
Cardiac Monitors and its accessories
Infusion Pumps, knowledge of drugs used , action, reactions and contradictions.

PAPER-III

CARDIOPULMONARY RESUSCITATION

CARDIOPULMONARY

Simultaneous mouth to mouth breathing (artificial ventilation) and external / closed chest cardiac massage.

Cardio Pulmonary Resuscitation,(CPR) Basic Life Support

Advanced Cardiac Life Support, Neonatal Resuscitation.

RESUSCITATION

Restoring life in the apparently dead, as in drowning, electric shock, respiratory arrest.

ABC Protocol
Initial assessment
Call for help Resuscitation

BASIC LIFE SUPPORT

Assessment
ABC procedure
Drugs
First Aid

ADVANCED CARDIAC LIFE SUPPORT – ADULT

ABC protocol for adult
Drugs
Defibrillation
O2 Support

CPR FOR CHILD

ABC Protocol for a Neonate
Assessment
Drugs
After care

ICU MANAGEMENT

MECHANICAL VENTILATION	Definition, Types, setting of Ventilator Adult / Child Inotropes Endotracheal Intubation / suctioning Monitoring / weaning
MONITORING DURING SURGERY	NIBP SPO ₂ ECG ETCO ₂
CRITICAL CARE MONITORING	Preoperative complications and their management Post operative immunization Cardiac Intensive care Shock
SPECIAL MONITORING METHODS	Invasive monitoring techniques Types – CVP, Procedure Peripheral Nerve Stimulation (NM Junction)
ELECTROLYTE AND FLUID BALANCE	Normal fluid & electrolyte mechanism Monitoring fluid volume deficit and excess Management Chart maintenance
OTHER PROCEDURES	Pace maker (Temporary / Permanent) Extubation Water seal drainage Removal of drains

PRACTICALS

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