DOTT

3

Syllabus of Diploma in Operation Theater Technology

First Year

1. Anatomy & Physiology
2. Computer & Communication Skills
3. Basic Bio Chemistry Pathology & Micro Biology
4. Basic obstetrics and Gynecology
5. General Principal of Hospital Practice and Patient Care

Practical:

- Anatomy & Physiology
- Basic Bio Chemistry, Pathology & Micro Biology
- Basic obstetrics and Gynecology
- O.T. Instruments & Technique
- Hospital Training 45 Days after final examination

Second Year

1. Entrepreneurship & Professional Management
2. Environmental &Bio Medical Waste Management
3. Patients Care education and Intensive Care unit
4. Introduction to Anesthesia Technology
5. Basic Anesthesia Technology
6. Applied Anaesthesia Technology

Practical:

- Patients Care education and Intensive Care unit
- Introduction to Anesthesia Technology
- Basic Anesthesia Technology
- Applied Anesthesia Technology
- O.T. Instruments & Technique
- Hospital Training 45 Days after final examination

Examination Scheme *for (1st Year)* Diploma in Medical Operation Theater Technology

Subjects	Hrs. Per Week			Theory	Exam	Maximum Marks						
D.O.T.T First Years	L	T	P	Paper	Hrs.	I.A.			Exam			Total
						A	B	Total	A	B	Total	
Anatomy & Physiology	5	1	-	T	3	15	15	30	35	35	70	100
Computer & Communication Skills	2	1	-	T	3	15	15	30	35	35	70	100
Bio Chemistry & Pathology, Micro Biology	5	1	-	T	3	15	15	30	35	35	70	100
Basic obstetrics and Gynecology	4	2	-	T	3	30			70			100
General Principal of Hospital Practice and Patient Care	4	2	-	T	3	30			70			100

Practical:

	Hrs Per Week	Practical Paper	Exam Hrs.	Maximum Marks						
				IA			Exam			Total
				A	B	Total	A	B	Total	
Anatomy & Physiology	3	P	3	8	7	15	18	17	35	50
Bio Chemistry, & Pathology, Micro Biology	3	P	3	8	7	15	18	17	35	50
Basic obstetrics and Gynecology	3	P	3		15			35		50
O.T. Instruments & Technique	2	P	3	15			35			50
Hospital Training 45 Days after final examination	Operation Theatre Departments, CSSD						100			100
										800

All theory paper carries a maximum of 100 marks out of which 30 marks are for internal Assessment and 70 is for Council exam. All practical paper carries a maximum of 50 marks out of which 15 is for internal Assessment and 35 is for Council Exam. And hospital training each 100 hundred marks.

PAPER-I

A (ANATOMY) , B (PHYSIOLOGY)

I. The human body as a whole Definitions, Subdivisions of Anatomy, Terms of locations and position, Fundamental Planes, Vertebrate structure of man, organization of the Body Cells and Tissues.

II. Locomotion and support. ***The Skeletal system:*** Types of bones, structures and growth of bones, Divisions of

the skeleton, Appendicular skeleton, Axial skeleton, Bones of Upper Limb – Clavicle, Scapula, Humerus, Radius, Ulna Lower Limb – Femur, Hipbone, Sacrum Tibia, Fibula Vertebral Column, Ribs, Sternum, joint-classification, types of movements with examples.

III. Anatomy of the nervous system. ***Central nervous system:*** Spinal Cord Anatomy, functions, reflex- arc, Meninges, ***The Brain-*** Hind Brain, Midbrain, Forebrain: Cerebrum, Cerebellum Brain Stem: Brief structure, location, functions, and Peripheral nervous system (structure of neuron)

IV. Anatomy of circulatory system: ***Heart*** size, location, coverings, chambers & valves of heart, Blood supply, Nerve Supply, blood vessels, General plan of circulation, pulmonary circulation, Names of major arteries and veins and their positions, lymphatic system: general plan.

V. Anatomy of the respiratory system: Organs of Respiratory System, Conducting portion, ***Nose:*** nasal cavity, Para nasal air sinuses, Larynx, trachea, bronchial tree. **Respiratory portion:** Pleurae and lungs, Brief knowledge of parts and position.

I. Anatomy of the digestive system: Components of Digestive system, alimentary tube, Anatomy of organs of digestive tube, mouth, salivary glands, stomach, intestine, liver, Billary apparatus, pancreas, Names and positions and brief functions,

VII. Anatomy of excretory system and reproductive system. Kidneys: location, gross structure & function structure of nephron, excretory ducts, ureters, Urinary bladder, Urethra gross structure & function. Male Reproductive System: Testis, Duct system. Female Reproductive System:

VIII. Anatomy of the endocrine system. Name of all endocrine glands their positions, Hormones and their functions- Pituitary, Thyriod, parathyroid, Adrenal glands, Gonads & Islets of pancreas.

IX. Histology-Epithelium, connective tissue, gland.

Anatomy Practical:

- Demonstration of bones identification and side determination upper limb-clavicle, scapula, humerus, radius, ulna, lower limb-temur, Hip bone, Tibia, Fibula, Vertebral Column, Ribs, Sternum, Sacrum
- Demonstration of heart.
- Demonstration of different parts of respiratory system and normal X-rays- lungs.
- Demonstration of the part of digestive system and normal X-rays- stomach, small intestine, large intestine, liver.
- Embalming of human cadavers for teaching purposes & social/ funeral embalming.
- Surface anatomy on cadaver.
- Demonstration of major vessels of the body-Aorta, subclavian, carotid, brachial, radial, ulnar, femoral, renal
- Demonstration of major muscles of the body-limbs
- Demonstration of other organs—spleen, testis, uterus.

(B) PHYSIOLOGY:

General Physiology: Cell: Structure and function of a cell, Transport across the cell membrane Active transport, Passive Transport: Diffusion & Osmosis, Tissues: Definition, types, Nerve Body water and body fluids:

Distribution and Ionic composition of body fluids The Membrane Potentials: Resting membrane potentials and Action Potential

Blood: Composition and functions of blood, Blood Cells: RBC, WBC, Platelets, Hemoglobin, Coagulation of blood (Clotting factors), Blood groups, Immunity,: Anaemia, Jaundice, Hemophilia

Gastrointestinal Tract: Structure and Functions Oral Cavity: Composition and functions of saliva, Mastication (chewing), Swallowing Stomach: Structure and Functions, Gastric juice, Gastric motility and emptying Pancreas: Structure and Functions, Composition and functions of pancreatic juice Liver: Structure and Functions Gall Bladder: Functions of gall bladder Bile: Composition and functions Intestine: Intestine juice and movements Balanced diet Applied aspect.

Respiratory System: Air Passages: Function and structure, Functions of respiratory system, Mechanism of respiration (Inspiration and Expiration), Lung volumes and capacities Alveolar Ventilation, Dead space (Anatomical and Physiological) Transport of gases: Oxygen transport [Carriage of oxygen in blood; Dissolved form & combined with hemoglobin], Oxygen hemoglobin dissociation curve, Carbon-di-oxide transpor [Carriage of Carbon-di-oxide in blood]. Regulation of respiration: Nervous Regulation [Automatic control via Medullary and Pontine centers, Voluntary control of respiration], Chemical Regulation of respiration [Peripheral chemoreceptors (Carotid bodies and Aortic bodies) and Central (Medullary) chemoreceptors]. Hypoxia (Types of hypoxia), Dyspnea

Cardiovascular System: Properties of Cardiac Muscle Physiological structure and function of CVS (Valves, Pacemaker tissue,Heart sounds) Cardiac Cycle Heart rate Electrocardiography, Cardiac Output Arterial blood pressure Regulation of cardiovascular system

Excretory System: Nephrons: Cortical and medullary Urine formation Micturition Functions of kidney: Endocrine functions, Water balance, Acid-base balance

Endocrine System: Definitions and properties of hormones Pituitary Gland Anterior Pituitary – Six Hormones (GH, PRL, TSH, ACTH, LH, FSH) Growth Hormone (GH): Action and control, Applied (Dwarfism and Acromegaly) Prolactin (PRL): Action and control Posterior Pituitary ADH (Anti diuretic hormone): Action and control, Applied Oxytocin: Action and Control Thyroid Gland: Types of hormones (T3 and T4), Regulation of hormone secretion, Actions of thyroid hormone: On carbohydrate metabolism, On lipid metabolism, On growth and development, Effect on nervous system, Applied (Goiter, Hypothyroidism, Hyperthyroidism) Parathyroid, Calcitonin and Vitamin-D: Role of calcium in physiological processes, Hormones regulating calcium metabolism (Vitamin-D, PTH, Calcitonin), Applied: Rickets Adrenal Cortex: Actions of glucocorticoids, : Actions of Mineralocorticoids, Applied: Cushing's syndrome, Addison's disease, Sex hormones Adrenal Medulla: Actions of catecholamines, Pancreas: Hormones: Glucagon and Insulin, Applied: Diabetes Mellitus

Reproductive System Sex determination, Sex differentiation and Puberty Male Reproductive System: Testis: Structure and functions, Spermatogenesis, Structure of the sperm, Seminal fluid (semen), Endocrine functions (Testosterone) Female Reproductive System.Structure and functions, Ovary, Ovarian hormones (Estrogen, Progesterone) Menstrual cycle: Menopause Contraceptive measures

Central Nervous System Organization and functions of nervous system Brain: Cerebrum, Thalamus, Hypothalamus Brain stem: Midbrain, Pons, Medulla, Cerebellum Spinal Cord: Structure and functions Autonomic Nervous system (ANS) Cerebrospinal Fluid

Special Senses: The Smell: Olfactory receptors, Olfactory pathway The Taste: Taste Receptors (Taste buds), Taste Pathway The Ear: External ear, Middle Ear, Internal ear (Cochlea), Mechanism of hearing, Applied (deafness) The Eye: Parts of eye: Sclera, Choroid, Retina, Crystalline lens, photoreceptors (Rods and cones),

Visual Pathway, Image formation, Accommodation, Lacrimal gland, Applied (Cataract, Glaucoma, Blindness)
Skin and Temperature: Structure and function of skin Temperature Regulation

Practical:

- Collection of blood
- Study of haemocytometer. Haemoglobinometry white blood cell count, red blood cell count,
- Determination of blood groups.
- Leishman's staining and differentiate WBC counts.
- Determination of packed cell value
- Calculation of blood indices, fragility test for R.B.C.
- Erythrocyte sedimentation rate (ESR)
- Determination of bleeding time.
- Determination of clotting time
- Blood pressure recording auscultation for heart sounds, artificial respiration determination of vital capacity.

Recommended Books:

1. Text books of Physiology. Author: Guyton (Arthor C). Prism publishers Bangalore.
2. Human Physiology. Author : Chaterjee (cc). Medical allied agency
3. Concise Medical physiology. Author : Choudhary (Sujit km.). New central books Kolkata.
4. Review Medical physiology. Author : Ganang. Application and Lange.
5. Human physiology. Author : Pro. A.K. Jain. Avichal Publishing Company.
6. Practical Physiology : Author : Prof. A.K. Jain, Arya Publishers.

PAPER II – COMPUTER & COMUNICATIONS SKILLS

A- COMMUNICATION SKILL

COURSE OUTLINE

COURSE DESCRIPTION: This course is designed to help the student acquire a Good command and comprehension of the English language through individual Papers and conferences.

BEHAVIOURAL OBJECTIVES:

The student at the end of training is able to

1. Read and comprehend English language
2. Speak and write grammatically correct English
3. Appreciates the value of English literature in personal and professional life.

INTRODUCTION:

Study Techniques
Organization of effective note taking and logical processes of

Analysis and synthesis Use of the dictionary
Enlargement of vocabulary
Effective diction

Unit -1

1. Parts of Speech (Definition of all the sight parts along with examples and their use in language) Articles : Definite and indefinite Articles (a. an and the) Definition and its uses along with examples and personal, Reflexive, Emphatic , Demonstrative, Relative, indefinite, Interrogative and distributive pronouns
2. The Noun (Defining Noun along with types and categories): Gender; Number Case, The Adjective: Comparison, adjective used as nouns, positions of the adjective and its correct use of adjectives. The Verb Definition. Its forms, Verbs of Incomplete Predication.
3. Phrases (Defining it along with examples) : Adjective, Adverb and Noun Phrase and Clauses (defining it along with examples) : Adverb, Adjective and Noun Clauses.
4. The Sentence and its types, Simple, Compound and Complex , Subject and Predicate (Parts of a senten), Transformation of sentences : Active and Passive Voice, Mood and Narration (Direct and indirect Speeches)

Unit-II

1. Words and Phrases: Word Formation (Perfix, Suffix), Idioms, Synonyms and Antonyms
2. Phonetics: Speech Sound, the phoneme, the syllable and IPA transcription

Business Correspondence:

Unit -1

1. Paragraph Writing : Introductory Remarks, Principals, The Writing of Single Paragraphs and Precis Writing.
2. Letter Writing, Quotations, Orders and Tenders: Inviting and Sending quotations, Placing orders and inviting tenders.

Unit –II

1. Notices , Agenda and Minutes
2. Application Letter: Importance and function, drafting the application, elements structure, preparing CVs.

UNIT -III: **APPLIED GRAMMAR:**

3. Correct usage
4. The structure of sentences
5. The structure of paragraphs
6. Enlargements of Vocabulary

UNIT - IV: **WRITTEN COMPOSITION:**

Precise writing and summarizing
Writing of bibliography
Enlargement of Vocabulary

Suggested Reading: English Grammar and Composition Wren and Martin. S. Chand & Company Ltd.

(B) Computer:

1. Computer Application

Characteristic of computers.

a. Input, output, storage unites.

b. CPU, Computer system.

2. Computers Organization

a. Central Processing Unit.
b. Control Unit.
c. Arithmetic Unit.
d. Instruction Set.
e. Register.
f. Processor Speed.

2.2 Memory

a. Main Memory.
b. Storage Evaluation Criteria.
c. Memory Organization.
d. Memory Capacity.
e. Random Access Memories.
F. Read Storage Devices.
   i. Magnetic Disk
   ii. Floppy and Hard Disk.
   iii. Optical Disks CD-ROM
   iv. Mass Storage

2.3 Input Devices

a. Keyboard.
b. Mouse.
c. Trackball.
d. Joystick
e. Scanner
f. Optical Mark Reader
g. Bar-Code Reader

h. Magnetic ink character reader.
   i. Digitizer.
   ii. Card reader.
   iii. Voice recognition.
   iv. Web cam.
   v. Video Cameras.

2.4 Output Devices

a. Monitors.
b. Printers.
   i. Dot Matrix Printers.
   ii. Inkjet Printers.

iii. Laser Printers.

c. Plotters.

d. Computers Output Micro Files (Com).

e. Multimedia Projector.

3. Operating System

a. Microsoft.

i. An overview of different version of windows.

ii. Basic windows elements.

iii. File management through windows.

iv. Using essential accessories : System took Disk cleanup. Disk defragmenter, Entertainment, Games, Calculator. Imaging - Fax, Notepad, paint, WordPad. Recycle Bin, Windows Explorer, Creating Folders, Icons.

4. Word Processing:

a. Word processing concepts.

b. Saving, closing, opening an existing document.

c. Selecting text, editing text.

d. Finding and replacing text.

e. Printing documents.

f. Creating and printing merged documents, Mail merge.

g. Character and paragraph formatting, page design and layout.

h. Editing and proofing tools; checking and correcting spelling.

i. Handing graphics.

j. Creating tables and charts.

k. Documents templates and wizards.

5. Presentation Package:

a. Creating opening and saving presentations.

b. Creating the look of your presentation.

c. Working in different views, working with slides.

d. Adding and formatting text, formatting paragraphs.

e. Checking spelling and correcting typing mistakes.

f. Making notes pages and handouts.

g. Drawing and working with objects.

h. Adding clip art and other pictures.

i. Designing slides shows.

j. Running and controlling a slide shows.

k. Printing Presentations.

Unit-1 : Use at Internet and E-mail :

1. Internet.
2. Websites (Internet sites).
3. The Mail Protocol site.

Unit-2 : Hospital Management System : Types and Uses.

1. Hospital Management and System Package.

REFERENCE BOOKS :

1. Foundations of computing first edition, 2002. *Author :* P.K. Sinha and P. Sinha.
2. Microsoft office 2000 for windows, second Indian pint, person education. *Author :* S. Sagman.

Paper 3 (A) Biochemistry & (B) Pathology, Microbiology 1st year:

(1) Acids and Bases. Definition. definition of pH and its interpretation.

(2) Water and Solutions. Osmosis, Molarity, Molality, Normality. Buffer solution and their importance. pKa of buffer solution.

(3) Chemistry of Carbohydrates: Definition, Classification, Structural Isomerism, Optical isomerism. reactions.

(4) Chemistry of Proteins and Amino Acids: Definition, Structure and classification of Amino Acids. Essential amino acids. Definition, Structure of proteins, Functional classification of proteins.

(5) Chemistry of Lipids: Definition of lipids, Classification of lipids, Phospholipids, Gangliosides, Cerebrosides, Glycolipids, Lipoproteins (definition, classification and functions) Chemical reactions of Lipids.

(6) Chemistry of Nucleic acids: Structure of DNA, RNA classification and structure of the various types of RNA.

(7) Nutrition and Basal metabolism: BMI and its calculation, Specific dynamic action (SDA) , Nutritional requirements and their calculations. Protein energy malnutrition.

(8) Vitamins: definition, Classification, Uses in the body and deficiency diseases.

(9) Clinical biochemistry:(for MLT course only)

(a) Photometry: Laws of Photometry, absorbance, transmittance, Structure and components of a photometer. Types of photometry: colorimetry, spectrophotometry, flurometry. Choice of filters etc.

(b) Electrophoresis Principal types and applications.

Practical:

- Introduction to apparatus, instruments and uses of chemical balance.
- Preparation of solutions, calculation of molecular weights and Equivalent weights preparation of normal solution, molar solutions, percent solution and reagents Dilution techniques.
- Measurements of hydrogen ion concentration qualitative Analysis. Identification of carbohydrates, proteins and substances of biochemical Importance.
- Demonstration of colorimeter, spectrophotometer, perimeter, single pan balance.
- Disposal regulations, workplace hazardous.
- Specimen collection, identification, transport, delivery and preservation.
- Patient preparation for tests.
- Anticoagulants and preservatives
- Regulations and precautions regarding transport of biological specimens
- Preparation of high quality water
- pH determination
- Preparation of buffers and determination of pH
- Measurement of radioactivity

- Practical related to solvent extraction, Partition coefficient, Dialysis, Concentration,
- Desalting and Ultracentrifugation.
- Calibration of equipments and laboratory wares.
- Familiarization and usage of Colorimetry, specterophotometry, fluorimetry,
- flame photometry, atomic absorption spectroscopy, nephelometry, osmometry,
- Chemiluminesence ,ion selective electrodes, flowcytometry.
- Chromatography : - Paper, Thin layer, Gel filtration, Ion exchange, HPLC, GLC,
- Separation of various sugars, amino acids, lipids, drugs toxins etc. Urine aminogram.

(B) Pathology, Microbiology:

1 YEAR 70 HRS

UNIT 1 The Cell in health and disease 10 HRS

a. Introduction of pathology
b. Cellular structure and metabolism
c. Inflammation – Acute and Chronic
d. Derangement of Body Fluids and Electrolytes
Types of shocks
Ischaemia
Infection

UNIT 2 Body Fluid 20 HRS

a) Urine :
Method of Collection
Normal Constitutents
Physical Examination
Chemical Examination

b) Stool Examination :
Method of Collection
Normal Constituents and appearance
Abnormal Constituents (Ova, Cyst)

c) C.S.F. Examination
Physical Examination
Chemical Examination
Microscopy
Celll Count
Staining

d) Semen Analysis
Collection
Examination

Special Tests
Human blood group antigens and antibodies
b) ABO Blood group systems
Sub. – group
Source of antigens and types of antibodies

c) Rh Blood group System

Types of Antigen
Mode of Inheritance
Types of Antibodies

d) Other Blood grup Antigens

e) Blood Collection
Selection and screening of donor
Collection of blood
Various anticoagulants
Sotrage of Blood.

Changes in Blood on Sotrage

UNIT 3 HISTOPATHOLOGY 25 HRS

a) Fixation of tissues

Classification of Fixatives

b) Tissue Processing

Collection
Steps of fixation

c) Section Cutting
Microtome and Knives
Techniques of Section Cutting
Mounting of Sections
Frozen Sections

d) Decalcification
Fixation
Declacification
End Point

e) Staining Dyes and their properties, H & E Stain, Special Stains

Histo Pathology ,Clinical Pathology, Haematology and Blood Banking

HistoPathology - Theory

- Introduction to Histo Pathology
- Receiving of Specimen in the laboratory
- Grossing Techniques
- Mounting Techniques – various Mountants
- Maintenance of records and filing of the slides.
- Use & care of Microscope
- Various Fixatives, Mode of action, Preparation and Indication.
- Bio-Medical waste management
- Section Cutting
- Tissue processing for routine paraffin sections
- Decalcification of Tissues.
- Staining of tissues - H& E Staining
- Bio-Medical waste management

Clinical Pathology – Theory

- Introduction to Clinical Pathology
- Collection, Transport, Preservation, and Processing of various clinical specimens

- Urine Examination – Collection and Preservation of urine.
Physical, chemical, Microscopic Examination
- Examination of body fluids.
- Examination of cerebro spinal fluid (CSF)
- Sputum Examination.
- Examination of feces
Haematology – Theory
- Introduction to Haematology
- Normal constituents of Blood, their structure and function.
- Collection of Blood samples
- Various Anticoagulants used in Haematology
- Various instruments and glassware used in Haematology, Preparation and use of glassware
- Laboratory safety guidelines
- SI units and conventional units in Hospital Laboratory
- Hb,PCV
- ESR
- Normal Haemostasis
Bleeding Time, Clotting Time, Prothrombin Time, Activated Partial Thromboplastin Time.
Blood Bank
Introduction
Blood grouping and Rh Types
Cross matching

Practical:

1. Introduction: Aim, basis, interpretation, safety in clinical pathology laboratory.
2. Laboratory organisation : Instruments, glassware's, sample collection and specimen labeling, routine test, anticoagulants, reagents, cleaning of glassware, isotonic solution, standardization of methods, preparation of solution and interpretation of result, normal values.
    1. Basic requirements for hematology laboratory.
    2. Complete Blood Counts.
    3. Determination of Hemoglobin.
    4. TRBC Count by Hemocytometers.
    5. TLC by Hemocytometer.
    6. Differential Leukocyte count.
    7. Determination of Platelet count.
    8. Determination of ESR by wintrobes.
    9. Determination of ESR by Westergerent's method.
    10. Determination of PCV by Wintrobes.
    11. Erythrocyte Indices – MCV, MCH, MCHC.
    12. Reticulocyte count.
    13. Absolute Eosinophil count.
    14. Morphology of Red Blood Cells.
    15. BT and CT, PT (prothrombin) time.

16. Demonstration of (MP), malaria parasite.
17. Bone marrow smears preparation and staining procedure – Demonstration.
18. ABO Blood grouping, RH typing and cross match.
19. Performance of direct and indirect combs test, red cell agglutination test (screening Paul bunnel test).
20. Blood donor selection and screening.
21. Blood collection and preservation, principal of clearing and preparing transfusion bottle and tubing sets – preparation and Transfusion reaction and their investigations.

PRACTICAL BLOOD BANK:

1. **Blood Bank Administration**
   a) Record Keeping
   b) Computerization in blood transfusion services.
   c) Blood grouping ABO
   d) PH typing various techniques.

2. **Cross Matching**
   a) Tube test
   b) Slide Test
   c) DU Test
   d) Sub Grouping Test

3. **Comb's Test**
   a) Direct comb's test
   b) Indirect comb's test

4. Compatibility Testing for blood transfusion cross matching test.
   a) 5% cell suspension and 10% cell suspensions.
   b) HIV and AIDS demonstration.

Clinical Pathology:

- Introduction: Aim, basis, interpretation, safety in clinical pathology laboratory.
- Laboratory organization : Instruments, glassware, sample collection and specimen labeling, routine test, anticoagulants, reagents, cleaning of glassware, isotonic solution, standardization of methods, preparation of solution and interpretation of result, normal values.
- Urine routine examination normal / abnormal constituents of urine.
- C.S.F. and other body fluid examination.
- Semen Analysis.
- Sputum test.
- Different types blood test.
- Stool routine examination.

Recommended text books and reference books (Latest Edition)

1. Hand book of Blood Transfusion Therapy. *Author* : J.A.F. Napier. *Publisher* : John Wiley & Sons,

Chichester, England

2. Blood Banking and Transfusion Medicine Basic Principles practice. *Author* : Christopher D., Hill Yeretal. *Publishers* : Churchile Livingstone, Philadelphia.
3. Test book of Blood Transfusion Banking and Transfusion Medicine. *Author* : Sallyv. Rhdman. *Publisher* : W.B. Sauders Company, Philadelphia.
4. Practical Haematology. *Author* : Sir John Dalie. *Publisher* : Churevill, London.
5. Test Book of Medical Laboratory Technology. *Author* : Praful Godkar & Ramnik Sood. *Publisher* : Bhaliani Publication House, Mumbai.
6. Test books of laboratory technology. *Author :* Praful Godkar.
7. Todd and Sanford Clinical diagnosis and management by laboratory methods. *Author :* Johan Bernard Henry.
8. Practical Pathology. *Author :* Harsh Mohan.
9. Medical laboratory technology a procedure normal for routine. *Author :* Ramnik Sood.

(B) Microbiology:

Theory

Unit I **4 hrs**

General microbiology

- Introduction & history of microbiology
- Morphology and physiology of bacteria
- Sterilization and disinfection

Unit II **5 hrs**

Immunology

- Antigen and antibodies
- Antigen – antibody reactions
- Structure and functions of immune system
- Immune response
- Hypersensitivity

Unit III **15 hrs**

Systemic bacteriology

- Staphylococcus
- Streptococcus
- Pneumococcus
- Corynebacterium
- Neisseria
- Clostridium

- Enterobacteriaceae : Escherechia ,Kleibsella, Proteus
- Salmonella
- Shigella
- Pseudomonas
- Vibrio
- Mycobacterium
- Spirochete.

Unit IV **11 hrs**

Virology

- Morphology and Replication of viruses
- Physiochemical characteristics of the viruses
- Classification of virus
- Laboratory diagnosis of viral infection
- Herpesvirus and adenovirus
- Picorna Virus- Polio
- Myxovirus- Influenza
- Arbovirus- Chickengunia & Dengue
- Hepatitis virus
- Rhabdovirus
- HIV

Unit V **6 hrs**

Mycology

- Morphology and structure of fungi
- Classification of fungi and Cultivation of fungi
- Laboratory diagnosis of fungal infection

Fungal infections

- Superficial mycosis
- Subcutaneous mycosis
- Systemic mycosis
- Opportunistic fungal infection

Unit VI **9 hrs**

Parasitology

- Introduction to parasitology with their classification

Protozoa

- Entamoeba histolytica
- Giardia lamblia
- Leishmania donovani (kala azar)

Helminthes

Cestodes

- Tenia solium & Tenia saginata
- Echhinococcus granulosus

Nematodes

- Ascaris lumbricoides
- Ancylostoma duodenale

- Wucheria bancrofti
- Enterobius vermicularis & Trichuris trichuria

Practical **17 hrs**

Bacteriology

- Universal precautions
- Collection and transport of clinical specimen
- Compound microscope (care and operation)
- Demonstration of sterilization of equipments- Hot air oven, bacterial filters
- Preparation of bacterial smear and staining- Gram's, Acid- fast, Staining of bacterial spores, flagella capsule, Albert stain, spirochaetes
- Preparation of commonly used culture media, nutrient broth, nutrient agar, blood agar, Chocolate agar, Mac conkey medium, LJ medium,SDA, Robertson cooked meat media,
- Study of clony charecters ,biochemical test for identification of bacteria, preservation of stock culture o bacteria
- Antibiotic susceptibility test – different in vitro methods for antibiotic sensitivity testing
- Visit to hospital for demonstration of biomedical waste management
- Anaerobic culture methods,
- Quality control of media and reagents etc.

Parasitology **4 hrs**

Practical parasitology

- Examination of stool for parasites
- Examination of blood & bone marrow for parasites

Serological diagnostic methods, Skin test.

6 hrs

Immunology practical

- Collection of blood by venepuncture, separation of serum and preservation of serum for short and long periods.
- Performances of serological tests
  - a) Bacterial slide agglutination
  - b) WIDAL,VDRL,CRP
  - c) Pregnancy test
  - d) ASLO, CRP and RF
  - e) ELISA
- Skin test
  - a) MT Test

3 hrs

Mycology practical:

- KOH and LPCB preparation
- Staining techniques
- Culture of fungi

- Slide culture

Total theory hours 50 hrs
Total practical hours 40 hrs

Paper 4- BASIC OBSTERTRIC AND GYNAECOLOGY

To work as Operation Theatre Technician the introductory knowledge of Obstetrics & Gynaecologyh is essential hence this subject is introduced to give brief on introductory knowledge ; which helps the technician to take some precautionary measures to keep required operation tools ready accordingly in advance.

OBJECTIVE : Student should be able to :

1. Understand the type of delivery and disorder
2. Keep the instruments and tools required ready well in advance

SYLLABUS:

1. Pregnancy
2. Normal delivery forceps delivery twin pregnancy
3. Episiotomy caesarian delivery
4. Birth control methods and contraception
5. Medical termination of pregnancy
6. Anatomy of female sex organs
7. Gynecological examination and diagnosis
8. Disease of vulve disease of vagina STD in female
9. Disorders of menstruation
10. Prolapsed uterus Fibromyomas of uterus endometriosis various ovarian tumors
11. Gynae examination instruments speculum & dialator
12. Instrument of common gynecological and obstetrics procedures or surgery

Practical:

- Identification of instrument and their specific use in the surgery
- Surgical assistance in the Obstetrics & Gynaecological operations

- Anaesthesia in early pregnancy
- Antenatal assessment of the pregnant woman
- Medical diseases complicating pregnancy
- Pain relief in labour
- Anaesthesia for operative obstetrics
- Emergencies in obstetrics
- Neonatal resuscitation

Paper 6 General Principal of Hospital Practice and Patient Care

Suggested number of teaching hours 100 including tutorial and demonstrations. This section is intended to emphasis to the student technologist the importance of patient welfare. Many of the points included in this

section may be considered during the teaching of other subjects also but it is strongly urged specific teaching and as much practical demonstrating and instruction as possible should be given in this section.

Modern hospital treatment is based on team work, it is essential that the student should appreciate the technologist role and that the importance of co-operation with wards and other departments.

The students should be attached to wards or the accident and emergency department for a definite training period the length of time being suited to the individual hospital.

Hospital procedure :Hospital staffing and organization records relating to patients and departmental statistic professional attitude of the technologist to patient and other members of the staff medico legal aspects accident in the department appointment organization minimizing waiting time out patient and follow up clinics stock taking and stock keeping.

Care of the patient First contact with patients in the department management of chair and stretcher patients and aids for this management for the unconscious patient elementary hygiene personal cleanliness hygiene in relation to patient (for example clean linen and receptacles nursing care temperature pulse and respiration essential care of the patient who has a tracheotomy essential care of the patient who has a colostomy bedpans and urinals simple application of a sterile dressing.

First aid : Aims and objective of first aids wounds and bleeding dressing and bandages pressure and splints supports etc Shock insensibility asphyxia convulsions resuscitation use of suction apparatus drug reactions prophylactic measure administration of oxygen electric shock burns scalds hemorrhage pressure points compression band Fracture splints bandaging dressing foreign bodies poisons.

Infection: Bacteria their nature and appearance spread of infections auto infection or cross infection the inflammatory process local tissue reaction general body reaction ulceration aspects and antisepsis.

Principles of asepsis Sterilization methods of sterilization use of central sterile supply department care of identification of instruments surgical dressings in common use including filament swabs, elementary operating theatre procedure setting of trays and trolleys in the radiotherapy department (for study by radiotherapy students only)

Departmental procedures : Department staffing and organization records relating to patients and departmental statistic professional attitude of the technologist to patient and other members of the staff medico legal aspects accident in the department appointment organization minimizing waiting time out patient and follow up clinic stock taking and stock keeping.

Drugs in the department: Storage classification labeling and checking regulations regarding dangerous and other drugs units of measurement special drugs ant depressive antihypertensive etc.

BOOK FOR STUDY:

Deeley-A guide to Radiotherapy nursing Living stone

Care of patient in diagnostic Radiography Chesney & Chesney

Chesney's Care of the patient in Diagnostic Radiography Pauline J.Culmer.

Aid to Tray and Trolley Setting Marjorie Hougton

First Aid-Haugher & Gardner

A guide to Oncology nursing (Livingstone) Deeley

O.T. Instrument & Technique:

Armamentarium: Cox and storing in O.T, Sterlization and disinfections

GENERAL SURGICAL PRINCIPLES AND INSTRUMENTS The surgical patient, operation room technique .

INSTRUMENTS USED FOR PREPAIRING SURGICAL

Cheatles forceps,rampely,s sponge holding forceps mayo's towel chip,esmach's bandage,

Simple tourniquet, pneumatic tourniquet:

INCISION MAKING METHOD AND INSTRUMENTS : Bard parker knife handle, major abdominal incision, artery forceps and their types instruments used in homeostasis, Kocher's forceps, electric cautery.

RETRACTORS: Single hook retractors , Czerny's retractor, s, nerve hook retractors, Morris retractors, deaver's, retractors.

WOUND MANAGEMENT Seissors and its types sucking material and techniques,disinfectants and irritants, dressing procedures ,different types of bandages, surgical needle & needle holders, various types of suture material

Identification & Demonstration of working of the equipment

Anesthesia Equipment

1 Boyle's Machine & it's functioning

2 Boyle's vaporizer

3 Magill's breathing circuit, Bains breathing circuit, pediatrics anesthesia circuit

4 Gas cylinders and flow meters

5 Carbon dioxide absorption contester

6 Suction apparatus-foot operated, electrically operated

7 Ambubag laryngoscope hndotracheatubes

8 Catheters,face masks, venti mask

4 Pre-anesthetic mediation

5 Local Anesthetic agents

6 Spinal Anesthetic agents

7 General Anesthetic agents

Identification & demonstration of the working of equipments

Second Year
Examination Scheme

Subjects	Hrs. Per Week			Theory Paper	Exam Hrs.	Maximum Marks		
	L	T	P			I.A.	Exam	Total
Entrepreneurship & Professional Management	2	1	-	T	3	15	35	50
Environmental &Bio Medical Waste Management	2	1	-	T	3	15	35	50
Patients Care education and Intensive Care unit	4	3	-	T	3	30	70	100
Introduction to Anesthesia Technology	3	2	-	T	3	30	70	100
Basic Anesthesia Technology	3	2	-	T	3	30	70	100
Applied Anesthesia Technology	3	2	-	T	3	30	70	100

Practical:

Subjects	Hrs Per Week	Practical Paper	Exam Hrs.	Maximum Marks		
				IA	Exam	Total
Patients Care education and Intensive Care unit	4	P	3	15	35	50
Introduction to Anesthesia Technology	4	P	3	15	35	50
Basic Anesthesia Technology	3	P	3	15	35	50
Applied Anesthesia Technology	1	P	3	15	35	50
O.T. Instruments & Technique	2	P	3	15	35	50
Hospital Training 45 Days after final examination	Operation Theatre Departments, CSSD				100	100
			G. Total			850

Paper I Entrepreneurship & Professional Management

Common to All Branches of Para medical Programmers

As the opportunities for wage employment are reducing day by day, Govt. of India and State Govt. directed to develop entrepreneurship among the student. Entrepreneurship training is essential to make aware the student of different branches of diploma courses about the scope of employment outside the Govt. Sector. It will equip them the necessary skills and training for setting up a small scale enterprises in their own area of study. This course includes the procedure how to select proceed and start the small scale enterprises. To achieve the target and goal in a organization it is essential to ordinate the entire system. For this the knowledge of principles of management personnel management and financial management is required

1. **Entrepreneurship :**

Definition basic concept need, scope and characteristics of entrepreneurship.

Women entrepreneurship

Assistance to small scale enterprises from national level organization like SIDO, NSIC NRDC KVIC

Assistance to small scale enterprises from State level organization like DOI,DIG RFC RHDC Pollution Control Board Rajasthan Khadi &

Facilities to omen entrepreneurs.

Diploma Course in Operation Theatre Technology

1. Course Duration 2 years (Preliminary – 1st year & Final –2nd year)
   Followed by 3 months compulsory post examination training after passing Final Examination

2. Examination: 1st Internal Assessment at the end of 6 months
   1st year (Preliminary Exam)
   2nd Internal Assessment at the end of 18 months
   2nd year (Final Exam)

3. Qualification for Admission: 10+2 with science (Physics, Chemistry & Biology/Maths)

4. ENROLMENT- No student shall be admitted to any examination of the university unless he/she has been enrolled with the University. A student during his enrolment with the university cannot enroll himself/ herself with any other Board/University. If any such case is reported, the enrolment of the student with the Board will be automatically cancelled and he /she will not be allowed to appear in any of the examination conducted by the University.

5. THEORY EXAMINATION (TH) - These shall be conducted by the University at the end of each year.

6. PRACTICAL EXAMINATON (PR) - These shall be conducted at the institution on behalf

   of the University at the end of each year.

7. SESSIONAL ASSESSMENT: - This will be done by the affiliated institution on behalf of the University on the basis of day to day work consisting of regular practical work done during the course of study and marking system will be on the basis of evaluation and attendance in practical training.

8. ELIGIBILITY FOR EXAMINATION: - For eligibility to appear in the exam a student must have attended at least 75% of the lectures delivered in each subject during the year and must also have attended at least 75% of the practical's conducted in each subject during the year. The deficiency in attendance in the theory classes to the extent of 5% may be condoned by the H.O.D. and an additional 5% by the principal of the college.

9. CHECKPOINT: - A student has to pass all the subjects of first year by the end of second academic year, from the year of enrolment failing which his/her enrolment with the university will automatically be cancelled.
   A student has to pass Diploma course by the end of four academic year (Attempts) from the year of enrolment, failing which his /her enrolment with the university will automatically be cancelled. The time limit to pass all subjects will not be extended by the institution, and if the student has been punished for the by the University for the use of unfair means in the examination.

10. PASSING STANDARDS:-
    Minimum 45% marks in each theory examination in the subjects listed under "th" in the teaching and examination scheme.
    Minimum 45% marks in each practical examination in the subjects listed under "PR" in the teaching and examination scheme.
    Minimum 45 %marks in sessionals"PR(S)" in each subject listed under "Sessional" in the teaching and examination scheme.

    Deficiency to the extent of 5marks in a subject (TH, PR and sessional) and up to 10 marks in a year may be condoned by the dean of the faculty. Deficiency will not be condoned in more than two subjects in a year. The student whose deficiency in a subject has been condoned will be

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deemed to have passed the subject. Condonation will be given first in sessionals then in practical and lastly in theory subjects.

Condonation marks will be awarded to a student in the eligible subject/subjects only after he /she has passed all the remaining subjects of the concerned year.

A Diploma student who has passed in all subjects in first year shall be promoted to second year.

A Diploma student, Who fails in Sessional of any year will not be promoted/allowed to keep term in higher class(year).Such student will be declared fail and he/she will have to repeat the year in which he/she fail in sessionals as a regular student.

A Diploma student who passes in sessionals but fails in theory & practical examination in first year in not more than two subjects theory and practical of a subject will be treated as one subject and will be allowed to keep term in second year . He/ she will be allowed to reappear as Ex-student in these subjects in the next year examination as and when held.

A Diploma student who passes in sessionals but fail in more than two subjects of first year theory /practical examination. is not eligible to keep term in the next higher class but may reappear in TH. PR or both as Ex-student in the subject / subjects in which he/she fails , in next year examination as and when held.

A Diploma student who reappears in theory /practical examination as Ex-student will retain full credit of sessional marks and mark of theory / practical examination for subject/subjects in which he/she does not re-appear.

A Diploma student cannot be given the benefit of condonation for the purpose of deciding promotion under regulation. Only the student failing in one or two subjects in any year examination can be given the benefit of condonation.

11. SPECIAL EXAMINATION:-
A Diploma student who passes in Sessional of final year but fails in Theory/Practical examination of final year will be allowed to reappear in special examination for final year to be conducted after suitable interval.
Only those diploma students who have passed all Theory/Practical subject other then final year shall be allowed in the special examination for final year.
The special examination will be treated as part of the regular examination.

12. AWARD OF DIPLOMA:-
A student will become eligible for award of a diploma after passing in all subject of the diploma cours

13. FINAL AGGREGATE FOR DIPLOMA COURSE FOR AWARD OF DIVISION:-
(i) 50% marks of the aggregate mark of I year
(ii) 100% marks of the aggregate marks of ii year,

14. AWARD OF DIVISION:-
The division will be awarded to successful diploma student on the basis of final

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Examination schedule for 2nd year

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Practical

Subjects	Hrs Per Week	Practical Paper	Exam Hrs	Maximum Marks		
				I.A.	Exam	Total
Patients Care education & Intensive care Unit	4	P	3	15	35	50
Introduction to Anesthesia Technology	4	P	3	15	35	50
Basic Anesthesia Technology	3	P	3	15	35	50
Applied Anesthesia Technology	1	P	3	15	35	50
O.T.Instruments & Tecnnique	2	P	3	15	35	50
Hospital Training 45 days After final Exam.	Operation Theatre Departments,CSSD				100	100
Grand Total						850

Main Syllabus

1. Basic Understanding of ethics, discipline, layout, equipment in OT
2. Technique of receiving, shifting and handling of patients to wards and recovery room
3. Applied Anatomy and Physiology
4. Clinical Pharmacology (Emergency drugs, Anaesthesia drugs and antibiotics and antiseptics etc.)
5. Common Surgical and Anaesthesia Instruments, Procedures Dressings, Sterilization Procedures
6. Routine care and maintenance of anaesthesia and Surgical equipments, fiberoptic endoscope, anaesthesia machines, Monitors etc.
7. Principles of IV Line, fluids, transfusion and CPR
8. Principles of Anaesthesia and Basic Anaesthetic techniques
9. Regional Anaesthetic techniques

15/5/18

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10. Providing assistance to surgeons and Anaesthesiologists
11. Book keeping and stock maintenance
12. Data collection, information computation and basic computer skills.

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Assistance to small scale enterprises from State level organization like DOI,DIG RFc RHDC Pollution Control Board Rajasthan Khadi.
Facilitis to women entrepreneurs.

Paper II **Environmental & Bio Medical waste Management**

Environment Introduction: Biotic and Abiotic environment; Adverse effects of Environmental Pollution; Control Strategies; Various Acts and Regulation.
Operation Theatre pollution – source and management
Electrical hazards in O.T.
Safety measures in O.T.
Bio Medical Waste: Bio Medical Waste Management; Introduction to bio medical waste; Types of bio medical waste; Collection of bio medical waste.

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Paper III **Patients Care education & Intensive care Unit**

I. professional qualities; a. Communication and relational skills –development of appropriate communication skills with patients, verbal and non verbal communication, appearance and behavior; b. Professional attitude of the technician to patients and other members of the staff; c. Records and reports – records relating to patients and departmental statistics; d. Minimizing waiting time out- patient and follow-up clinics, e. stock-taking and stock keeping; f. Administrative policies and disciplinary procedures; Importance of reporting.
II. Care of Patient: O.T. and ICU **a.** Contact with the patient and family members in the respective department; **b.** Patient transfer technique; **c.** Restraint techniques – consideration to be taken for the geriatric, paediatric, trauma, emotionally disturbed, and anaesthetized patients; **d.** Specific patient conditions – essentials of care of patients on ventilator, tracheostomy, tubes and catheters, nasogastric tubes, chest tubes, intravenous lines, oxygen & casts; e.Basics on hygiene and maintenance of hygiene; Essential care of patient with a colostomy, providing bed pans and urinals; f. Basics of nursing care – measurement of vital signs – sterile dressing.
III Care of patient in POST ANESTHESIA CARE UNIT (PACU) Airway integrity and compromise, Hypertension, Hypotension, Arrhythmia, Pain prevention and relief, Nausea and vomiting, Decreased urine output, Emergence delirium, Delayed emergence from anesthesia, Shivering, Post obstructive pulmonary edema, Evaluation to Determine Goal Achievement (End posting summative).
IV Introduction to mechanical ventilation and maintenance
V First Aid:- Aims and objectives of first aid; wounds and bleeding, dressing and bandages; pressure and splints, supports etc. shock; insensibility; asphyxia; convulsion; resuscitation, use of suction apparatus, drug reactions; prophylactic measures; administration of oxygen; electric shock; burns; scalds; haemorrhage; pressure points; compression band. Fractures; splints, bandaging; dressing, foreign bodies; poisons

Paper IV Introduction to Anesthesia Technology

History of Anesthesia: Prehistoric (Ether) era; Inhalational anesthetic era; Regional anesthetic era; Intravenous anesthetic era; Modern anesthetic era.
Anesthesia Machine: Boyle Machine & Its functioning. Hanger and yoke system; Cylinder pressure gauge; Pin index; Pressure regulator; Flow meter assembly; Vaporizers – Types; Hazards; Maintenance;Filling and Draining
Breathing and Respiration Systems: General considerations; Classification of Breathing system; Non breathing valves – Ambu valves,
Anesthesia Gas: Gas physics. States of matter; Temperature conversion; Humidity; Pressure measurement; Gas flows and diffusion; Gas laws; miscellaneous concepts such as

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PAPER V **Basic Anesthesia Technology**

Clinical Pharmacology

1. General Pharmacology

2. Drugs acting on the central nervous system
   - General anaesthetics
   - Sedative and hypnotics
   - Antiepileptic
   - Opioids analgesics
   - Non opioids analgesics

3. Drugs acting on the peripheral nervous system
   - Cholinergic agents
   - Cholinergic blocking agents
   - Sympathomimetic drugs
   - Sympatholytic drugs
   - Skeletal muscle relaxants
   - Local anaesthetic agents

4. Drugs acting on the cardiovascular system
5. Anticoagulants and antiplatelet agents
6. IV fluids and electrolytes
7. Antibiotics
8. Antiemetics
9. Emergency drugs
10. Drug calculation and dilution

Anesthetic Drugs: General Principles; Pharmacological classification of drugs; Route of drug administration; Precautions in administration; Principles of drug toxicity; Prevention and treatment of poisoning; Adverse drug reaction.
Anesthetic Agents: Local Anesthetic agents; Drugs used for General Anesthesia
Anesthetic Equipment Maintenance: Methods of cleaning and sterilization of anesthetic Equipments.
Spinal, epidural, & different peripheral nerve blocks and their complications. Regional Anaesthesia - Local anaesthetic agents used in regional anaesthesia, Indications, Contraindications, Dosage, Complications, Route of administrations example Lignocaine, Bupivacaine etc; Regional anaesthesia, Spinal anaesthesia in all age group of patients, Indications and Contraindications; Commonly used local anaesthetics, Adjuvants; Epidural anaesthesia, Epidural anaesthesia in all age group of patients Commonly used local anaesthetics; Adjuvants for Regional blocks; Upper limb block Lower limb block; Hernia block etc; Indications; Complications
Minimum Standards for Anesthesia: Who should give anesthesia?; Ten golden rules of anesthesia; Patient assessment and preparation; Checking the drugs and equipment; Keeping the airway clear; Be ready to control ventilation; Monitor pulse and BP.

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Techniques of G.A.- Pre anesthetic check up, Identification of patient, consent- written informed consent, Pre anesthetic medication, intraoperative monitoring, Induction of patient,bag mask ventilation ,intubation technique, maintenance of anaesthesia, reversal of patient.
Preparations for G.A., Spinal, epidural, different peripheral nerve blocks and central venous cannulation

Paper VI Applied Anaesthesia Technology

Basic Life Support Introduction to BLS, indications for BLS, and the process of BLS. Recovery position
Advanced Life Support Introduction to ALS, indications for ALS, and the process of ALS
Basic & Advanced Monitoring in Anaesthesia ECG,Temp. Monitoring Invasive Blood Pressure monitoring ,CVP, BIS,ABG, Thromboelastograph, Cardiac Output monitoring ,Neuro muscular monitoring , Defibrillator, rapid fluid warmer device, Infusion pump, Crash Cart, Difficult Airway Cart

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density and specific gravity.
Medical Gas: Medical Gas Supply; Compressed Gas Cylinders; Colour coding; Cylinders and Cylinder valves; Cylinder storage; Diameter index safety system; Medical gas pipeline system and station outlets; Air compressors; Oxygen concentrators; Alarms and safety devices..
Gas Administration Devices: Simple oxygen administration devices; Methods of controlling gas flow - Reducing valves, Flow meters, Regulators, Flow restrictors.
Oxygen Therapy: Definition, Causes and responses to hypoxemia; Clinical signs of hypoxemia; Goals of oxygen therapy; Evaluation of patients receiving oxygen therapy; Hazards of oxygen therapy
Gas Analyzers: Pulse Oximeter; CO2 Monitor; Gas analysis - Types and care;Transcutaneous oxygen monitors; Pulse oximeters; Capnography
Suction Machines: Suction apparatus - Foot operated, Electrically operated; Ambu bag and laryngoscope; Hand tracheal tubes; Catheters; Face masks, Ventimask, Drugs
Manual Resuscitators: Types of resuscitator bags; Indications; Hazards; Methods of increasing oxygen delivery capabilities while using oxygen with resuscitator bags
Artificial Air ways: Oral and Nasal endotracheal tubes; Tracheotomy tubes; Parts of airway and features; Types; sizes and methods of insertion; Indications for use; Care of long term airways and complications; Protocol for tracheotomy decannulation; Face masks – Types; sizes and its usage

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