

Diploma in Operation Theatre Technology

SEMESTER I

DOTT-101: Anatomy and Physiology

Anatomy

1. Introduction to Anatomy & Histology, Structure of cell, epithelial tissue, muscular tissue, nervous tissue.
2. Skeletal System, Structure of bones, types of bones, Bones of cranium, face vertebral column upper and lower limbs, fracture of bones, various movements of joints.
3. Muscular System, Structure and types of muscles in human body, important muscles and their group action.
4. Circulation System, Structure of heart, names and position of main blood vessels.
5. Lymphatic System, Lymph vessels, lymph nodes and lymphoid organs, their structure & functions.
6. Digestive systems. Parts of gastrointestinal tract and associated glands.
7. Respiratory System. Parts of Respiratory System.
8. Urinary System. Parts of Urinary System.
9. Endocrine System. Various endocrine glands. Thyroid. Parathyroid. Adrenal glands pituitary pancreas. Thymus and sex glands.
10. Reproductive System. Male & female Reproductive organs.
11. Skin and sense organs. Eye, Ear, Nose. Taste Buds
12. Nervous System. Parts of brain, spinal cord, peripheral nerves.

Physiology

- 1 Blood. Composition and function of blood, haemolysis, blood coagulation. Blood groups, body fluid.
 - 2 Cardiovascular Systems. Circulation of blood. function of heart and blood vessels. Control of heart rate, pulse, regulation of blood pressure, blood volume.
 - 3 Respiratory system. Function of lungs, mechanism of breathing and exchange of gases in the lungs, regulation of respiration, Respiration disorder like anoxia.dyspnea cyanosis etc.artificial respiration lung function tests.
 - 4 Digestive Systems. Digestion of food in mouth, stomach & small intestines. Absorption of food, function of liver function tests.
 - 5 Excretory Systems. Structure & function of kidney and urinary bladder. Mechanism of urine formation. disorders of kidney.
 - 6 Endocrine Glands Functions of various endocrine glands and hormones secreted by them.
 - 7 Reproductive Systems. Physiology & female reproductive organs.
 - 8 Nervous System.Neurone & its function, function of central nervous system, Autonomic nervous system , physiology of vision, hearing & olfaction.
- PRACTICAL: Identification of bones & other organs of the body and viva voce as per theory syllabus.

DOTT-102: Pathology & Microbiology

Pathology

CHAPTER 1:

CELL INJURY AND ADAPTATION: Causes of cell injury. Mechanism of cell injury, ischaemic & hypoxic injury, chemical injury ,reversible injury, necrosis ,cellular adaptation of growth & differentiation atrophy,hypertrophy,metaplasia,hyperplasia,classification of tumors ,pre-malignant lesion,diagnosis of

cancer.

CHAPTER 2:

ACUTE AND CHRONIC INFLAMMATION Acute vascular changes.phagocytosis
Chemical mediators of inflammation. Definition and causes of chronic inflammation.
granulomatous
inflammation, system manifestations of inflammation

CHAPTER 3:

DISORDERS OF VASCULAR FLOW AND SHOCK: Oedema, hyperemia or congestion, thrombosis, embolism.
Infarction shock, Ischemia, Over hydration, dehydration.

CHAPTER 4:

THE RESPONSE TO INFECTION Categories of infectious agents, host barriers to infection, how disease is caused, inflammatory response to infectious agents

CHAPTER 5:

THE HAEMATOPOIETIC AND LYMPHOID SYSTEM: Haemorrhage.various type of
Anaemia,leukopenia,leukoerythrocytosis,bleeding disorders coagulation mechanism ,maintenance of blood volume. Abnormalities of pH of blood.

Microbiology

CHAPTER 1: INTRODUCTION TO MICROBIOLOGY: Discovery of micro organisms. Classification and general characteristics of microorganisms, nutritional requirements of Micro-organisms.

CHAPTER 2: PRINCIPLES OF MICROBIAL CONTROL: Sterilization, importance of sterilization in OT techniques various methods-physical UV radiation, alcohols and heavy metals, Autoclave structure functioning control and indicators.

CHAPTER 3: IMMUNOLOGY: Antigen-antibody reaction anaphylaxis hypersensitivity

CHAPTER 4: VIROLOGY Imp disease caused by different viruses of mode of infection

SEMESTER I

DOTT-103: Surgical Equipment and Machinery

CHAPTER 1:

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

CHAPTER 2: GENERAL SURGICAL PRINCIPLES AND INSTRUMENTS The surgical patient, operation room technique .

CHAPTER 3 :

INSTRUMENTS USED FOR PREPARING SURGICAL

Cheaters forceps,rampely,s sponge holding forceps mayo's towel clip,esmach's bandage,
Simple tourniquet, pneumatic tourniquet

CHAPTER 4 :

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.

CHAPTER 5: RETRACTORS: Single hook retractors , Czerny's retractor, s, nerve hook retractors, Morris retractors, deaver's, retractors.

CHAPTER 6 :

WOUND MANAGEMENT Scissors 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

PRACTICAL :

Identification & Demonstration of working of the equipment and viva voce as per theory syllabus.

SEMESTER I

DOTT-104: Anesthesia Equipment & Drugs

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

Drugs

- 1 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
- 2 Sedatives & Hypnotics-Barbutrates morphine and others
- 3 Important groups of drugs, N Saids, ibuprofen, aspirin, antimicrobial agents anti allergy drugs , anti diuretics
- 4 Pre-anesthetic mediation
- 5 Local Anesthetic agents
- 6 Spinal Anesthetic agents
- 7 General Anesthetic agents

PRACTICAL:

Identification & demonstration of the working of equipments & viva voce as per theory syllabus

DOTT-105: Communication & Soft Skills

UNIT I

Essentials of Grammar:

- Parts of Speech
- Punctuation
- **Vocabulary Building**
- Phonetics

UNIT II

Office Management:

- Types of Correspondence
- Receipt and Dispatch of Mail
- Filing Systems
- Classification of Mail.
- Role & Function of Correspondence
- MIS
- Managing Computer

UNIT III

Letter & Resume Writing:

- Types of Letters-Formal / Informal
- Importance and Function
- Drafting the Applications
- Elements of Structure
- Preparing the Resume

- Do's & Don'ts of Resume
- Helpful Hints

UNIT IV

Presentation Skills:

- Importance of Presentation Skills
- Capturing Data
- Voice & Picture Integration
- Guidelines to make Presentation Interesting
- Body Language
- Voice Modulation
- Audience Awareness
- Presentation Plan
- Visual Aids
- Forms of Layout
- Styles of Presentation.

UNIT V

Interview Preparation:

- Types of Interview
- Preparing for the Interviews
- Attending the Interview
- Interview Process
- Employers Expectations
- General Etiquette
- Dressing Sense

- Postures & Gestures

UNIT VI

Group Discussion & Presentation:

- Definition
- Process
- Guidelines
- Helpful Expressions
- Evaluation

(Note: Every student shall be given 15 minutes. of presentation time & 45 minutes of discussion on his/ her presentation.)

The student will be evaluated on the basis of :

- his / her presentation style
- Feedback of Faculty & Students
- General Etiquette
- Proficiency in Letter Drafting / Interview Preparation

The paper is internal and at least 3 tests will be taken. Best 2 of 3 shall account for final grades (70% Test & 30% Presentation)

DOTT-106: Introductory Biology

Unit I

Living World

Biology & Its Branches; relationships with other sciences; scientific methods in Biology; historical breakthroughs; scope of biology and career options; role of Biology in dispelling myths and misbeliefs; characters of living organisms, (elementary idea of metabolism,

transfer of energy at molecular level, open and closed systems, homeostasis, growth and reproduction, adaptation, survival, death).

Origin and evolution of life - theories of evolution; evidence of evolution; sources of variations (mutation, recombination, genetic drift, migration, natural selection); concept of species; speciation and isolation (geographical and reproductive); origin of species.

Unit II

Diversity of Life

Variety of living organisms, Systematics; need, history and types of classification (artificial, natural, polygenetic); biosystematics; binomial nomenclature; Two kingdom system, Five kingdom System, their merits and demerits, status of bacteria and virus; botanical gardens and herbaria; zoological parks and museums.

Unit III

Cell and Cell Division

Cell as a basic unit of life - discovery of cell, cell theory, cell as a self-contained unit; prokaryotic and eukaryotic cell; unicellular and multicellular organisms; tools and techniques (compound microscope, electron microscope and cell fractionation); Ultrastructure of prokaryotic and eukaryotic cell - cell wall, cell membrane - unit membrane concept (fluid mosaic model); membrane transport; cellular movement (exocytosis, endocytosis); cell organelles and their functions - nucleus, mitochondria, plastids, endoplasmic reticulum, Golgi complex, lysosomes, lysosomes, microtubules, centriole, vacuole, cytoskeleton, cilia and flagella, ribosomes.

Molecules of cell; inorganic and organic materials - water, salt, mineral ions, carbohydrates, lipids, amino acids, proteins, nucleotides, nucleic acids (DNA and RNA);

Enzymes (Properties, chemical nature and mechanism of action); vitamins, hormones and steroids.

Unit IV

Genetics

Continuity of life - heredity, variation; Mendel's laws of inheritance, chromosomal basis of inheritance; other patterns of inheritance - incomplete dominance, multiple allelism, quantitative inheritance.

Chromosomes - bacterial cell and eukaryotic cell; parallelism between genes and chromosomes; genome, linkage and crossing over; gene mapping; recombination; sex chromosomes; sex determination; sex linked inheritance; mutation and chromosomal aberrations; Human genetics - methods of study, genetic disorders.

DNA as a genetic material - its structure and replication; structure of RNA and its role in protein synthesis; Gene expression - transcription and translation in prokaryotes and eukaryotes; regulation of gene expression, induction and repression - housekeeping genes; nuclear basis of differentiation and development; oncogenes.

Basics of Recombinant DNA technology; cloning; gene bank; DNA fingerprinting; genomics - principles and applications, transgenic plants, animals and microbes.

Unit V

Morphology of Plants and Animals

Morphology - root, stem and leaf, their structure and modification; Inflorescence, flower, fruit, seed and their types; Description of Poaceae, Liliaceae, Fabaceae, Solanaceae, Brassicaceae and Asteraceae.

Morphology of animals - salient features of earthworm, cockroach and rat; tissue systems, structure and function of tissues - epithelial, connective, muscular and nervous.

Practical

1. Study of parts of Compound Microscope

2. Study of mitosis in onion root tip and animal cell (grasshopper)
3. Study of meiosis in onion flower buds, and testis of grasshopper.
4. Study of cyclosis in leaf cell of Hydrilla, or Tradescantia and in Paramecium.
5. Study of cell wall components (cellulose, lignin, suberin and mucilage).
6. Study of mitochondria by staining with a Janus Green.
7. Study of specimens and their identification with reason - Bacteria, Oscillator, Spirogyra, Rhizopus, mushroom/bracket fungi, yeast, liverwort, moss, fern, Pinus, one monocotyledon, one dicotyledon and lichens.
8. Study of characters of specimens and identification with reason - Amoeba, Hydra, Liver - Fluke, Ascaris, Leech, Earthworm, Prwen, Silk moth honey bee, snail, Starfish, Dogfish, Rohu, Frog, Lizards, Pigeon/ any other bird and rabbit/ any other mammal.
9. Study of squamous epithelium, muscle fibres, nerve cells and mammalian blood film through temporary/permanent slides.
10. Study of external morphology of earthworm, cocroach, from and rat through models.

SEMESTER I

DOTT-107 Practical

Anatomy & Physiology: 15 Marks

Pathology & Microbiology: 15 Marks

Surgical Equipments & Machinery: 15 Marks

Anesthesia equipments and Drugs: 15 Marks

Introductory Biology: 15 Marks

Internal Assessment : 25 Marks

SEMESTER-II

DOTT-201: Medicine

CHAPTER 1: HISTORY TAKING AND SYMPTOMALOGY OF VARIOUS DISEASES. FEVER, polyuria, heart,

burns, vomiting, diarrhea, jaundice, epistaxis,

Chapter 2: ABDOMEN Hepatomegaly, splenomegaly, ascitis, cirrhosis, hepatitis, malaria, typhoid, aids.

CHAPTER 3 DISORDERS OF CIRCULATORY AND RESPIRATORY

SYSTEM Pleural effusion, pulmonary tuberculosis, pneumonia, dyspnoea, asphyxia, hypoxia, cardiac

failure, pericardial effusion, congenital heart diseases, cyanosis, hypertension, cardiac monitors, defibrillator.

CHAPTER 4 DISORDER OF NERVOUS AND ENDOCRINE SYSTEM:

Hemiplegia, paraplegia, paralysis, Parkinson's disease, coma, diabetes, Addison's disease, hyperthyroidism.

CHAPTER 5 MEDICAL EMERGENCIES : Cardiac arrest, bronchial asthma, respiratory failure, acute

gastroenteritis, meningitis, renal colic, hypoglycemia, acute poisoning.

CHAPTER 6 PREVENTIVE ASPECTS OF MEDICINE: Concept of health, preventive medicine, social medicine, public health, epidemiology of infectious diseases, methods of prevention and control of

infectious diseases.

PRACTICAL: Demonstrating the use of medical equipment and viva voce as per theory syllabus.

SEMESTER II

DOTT-202: SURGERY

CHAPTER 1 Introduction of surgery and basic principles of surgery, basic principles of surgery.

CHAPTER 2 : Tumors, benign and malignant, cysts, ulcers, sinuses, fistula, differential diagnosis of cyst and tumor.

CHAPTER 3 : FRACTURES AND DISLOCATION - Classification of fracture, management, fixation, reduction, immobilization, principles of closed reduction, artificial prosthesis.

CHAPTER 4 COMPARATIVE AND SURGICAL ANATOMY Investigation

of breast, benign disease, carcinoma of breasts, treatment of carcinoma of breast, mastectomy.

CHAPTER 5 : - HEAD INJURY -Common manifestation, management of patient, surgical interventions.

CHAPTER 6 : Cleft lip & palate, acute appendicitis, urethral strictures.

CHAPTER 7 : DIFFERENT SURGICAL INSTRUMENTS: Instruments used in major surgical operation

including Biliary, Tract Surgery, anorectal surgery, urological surgery, orthopedic surgery instruments, plastic surgery instruments

PRACTICAL : Demonstrating the use of medical equipment and viva voce as per theory syllabus.

DOTT-203: OBOTETRICS & GYNERACOLOGY

OBOTETERICS : Pregnancy, normal delivery, Forceps Delivery, episiotomy, caesarian delivery, Twin pregnancy birth control methods, Medical termination of pregnancy.

GYNAECOLOGY : Anatomy of female sex organs ,gynecological examination and diagnosis, diseases of vulva, diseases of vagina, S.T.D in female, disorders of menstruation. Prolapsed uterus, Fibromyomas

of uterus, endometriosis, various ovarian tumors, gynae examination instruments speculum & dialators, instruments of common gynecological and obstetrics procedures or surgery.

PRACTICAL : Identification of Instrument and viva voce as per theory syllabus.

SEMESTER II

DOTT-204: EYE & E.N.T.

EYE

CHAPTER 1: INSTRUMENTS USED FOR EXAMINATION OF EYE,

DESMASEL, S EYE LID : retractor, ophthalmic loop, ophthalmoscope and anatomy of eye.

CHAPTER 2 : Clinical methods in ophthalmology ,history taking ,ocular examination & diagnostic test, snell's formulae, tonometry, direct ophthalmoscopy.

CHAPTER 3 : Various eye diseases ,diseases of conjunctiva, trachoma, diseases of cornea, ulcerative keratitis, scleritis, diseases of lens, cataract glaucoma, retinal detachment, intraocular lens implementation for cataract.

ENT

CHAPTER 1: EAR: Anatomy of the ear, diseases of middle ear, Ramsay hunt syndrome, ear of mastoid

surgery, parotid surgery & trauma to face, tumors of external ear, auricle, middle ear, and rehabilitation of hearing impaired.

CHAPTER 2 : NOSE: Anatomy of nose, nasal septum & its diseases ,acute & chronic rhinitis, nasal polyps,epistaxis,fracture of nasal septum,

CHAPTER 3 : THROAT: Anatomy of throat, diseases of larynx, tracheotomy:- types, steps of operation, post operative care.

CHAPTER 4 : Instruments used in operation in Ear, Nose & Throat.

PRACTICAL : Demonstration the use of medical equipment and viva voce as per theory syllabus.

SEMESTER II

DOTT-205: PRACTICAL

Medicine : 15 Marks

Surgery : 30 Marks

Obstetrics & Gynecology : 15 Marks

EYE & ENT : 15 Marks

Internal Assessment: 25 Marks