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Paramedical council of India

DIPLOMA IN OPERATION THEATRE TECHNOLOGY

Eligibility

* Interested candidate must have passed 10+2 with physics chemistry biology or math with 40% marks by state board or any recognized board/ university.

First year 1st Paper

ANATOMY & PHYSIOLOGY

Anatomy-Grass Anatomy of the following:

1. Human body & anatomical terms & cell structure.
2. .**Muscular**-skeleton systems, skull, vertebral column, pelvic bones, extremities, rib cage.
3. **Respiratory systems**- nose, larynx, trachea, lungs and thoracic cavity.
4. **Cardio-vascular system**-Heart, major arteries & veins, renal & portal system.
5. **Alimentary system**- mouth, pharynx, esophagus, stomach, small intestine & large intestine, spleen, liver, gall bladder, pancreas.
6. Brain, spinal cord, menigeal coverings.
7. **Sensory organs**- skin, eyes, ears, tongue, nose.
8. **Urinary system**-kidney, urethra, urinary bladder-urethra.
9. Reproductive system- male & female.

Physiology- Grass physiology of the following system:

1. G.I.T system
2. **Urinary system**- kidney, formation of urine and role in electrolyte balance.
3. **Muscular system**- structure & function of cardiac muscles, skeletal muscle, involuntary muscles.
4. **Cardio Vascular system**-cardiac output, circulatory system, BP.
5. **Respiratory system**- Pulmonary system, exchange of gases, airway resistance.
6. **Central nervous system**- conduction of nerve impulse, peripheral, peripheral and automatic nervous system.
7. **Endocrine glands**- broad idea about metabolic processes, fluid and electrolyte balance, pituitary, thyroid, parathyroid and adrenal gland.
8. Maternal and neonatal physiology.
9. **Organs of special senses**-skin, ear, eye, tongue & nose.
10. Pressure loss due to abrupt change in bore of tube, principal of flow meters and its

types Bernoulli Principle & its application.

BASIC SCIENCE

1. **Applied physics+ Chemistry + Basic Computer**

Applied physics: Energy, Potential Energy, Kinetic energy, Mechanical Efficiency

1. Basic principles of mechanics like Concept of Force, pressure, mass weight, and properties of solid, liquids & gases.
2. Basic principle of Electricity as applied in the field of Operation Theatre, ICU, and CSSD.
3. Concept of static Electricity, concept of charge, potential current, power, resistance.
4. Basic principles of heat, concept of temperature, it measurement, ways of dispersion of heat.
5. Effect of heat, rise or fall in temperature. it effect on human bodies, methods of prevention of heat loss, rise or fall in temperature, it effect on bodies, methods of prevention of heat loss, thermometry, thermostat, thermo-couple.
6. Concept of volume, specific gravity, density, concentration of solutes.
7. Gas law & their practical implication in the field
8. Compressed gases &filling ratio, principle of pressure regulators, flow of gases, fluids viscosity, law of laminar, flow rate, turbulent floor, critical Reynolds's member, Resistance to laminar & Turbulent flow
9. Pressure loss due to abrupt change in bore of tube. Principle of flow meters and its types

Applied Chemistry:

Organic chemistry: Nomenclature of compounds containing, Halogens, alcohols, and Phenols, Ethane, propane, either, aldehydes and ketenes, carboxylic acid, cyanides isocyanides, Nitrogen compounds and amines.Haemogenous and Heterogeneous amino acids, peptides proteins and enzymes, carbohydrates and metabolism.

Computer Science:-

Introduction to programming

Representation or Information-Basic logic, Design and Memory, devices and data communication

Computer Oriented numerical and statistical methods- arithmetic, interactive method, solution of simultaneous linear equation, interpolation, approximation, numerical differentiations and integration, statistics methods, for casting tech., relevant BD, information extraction

PATHOLOGY

1. **Hb-** synthesis & degradation. Abnormal hemoglobin, Oxygen Carrying.
2. IV fluids.
3. Blood groups & blood transfusions, B.T., C. T.
4. Co-angulations & bleeding disorders , blood transfusion reactions
5. Sample collection, labeling & sending it to lab.
6. W.B.C., TLC and DLC, ESR and PCV

EMERGENCY MANAGEMENT

First aid
Road side accident
Shock, cardiac arrest, CPR
Disaster management
Shifting of critical patients
I C U (Intensive Care Unit):
Setup, services rendered rules, procedures, discipline, and management of asepses.
Types of patients, care & physiotherapy of unconscious patients
Equipments used in ICU, their function, operation and maintenance.
Suction catheters and tubes, CVP lines, Respiratory Ventilator, methods of suctioning
Humidifier, cardiac monitor, ABG, Spiro meter, central gas pipeline, intra arterial conflation
Duties of Assistant in ICU
Types of beds, ventilation of patient in crises mouth to mouth, mouth to tube AMBU bag
ICU lab
Management of tetanus patients
Psychological aspect of patient, relatives
Haemofilteration
ECG, EMG, EEG

Second year

MICROBIOLOGY & ANESTHESIA TECHNIQUES

1. Introduction
2. Different types of infections, pathological bacteria, viruses, and action-mycosis & fungi nosocomical infections.
3. Universal precautions for AIDS, HBV etc.
4. Infection in Operation Theater. HAI
5. Waste disposal.
6. Sample collection, labeling and sending it to lab.
7. Types of disinfections & sterilization
8. Antigen and antibody reaction.
9. Aims and objectives
10. Types of Anesthesia & Analgesics (routes, IV, skin patches, suppositories etc.
11. General anesthesia
12. Local blocks
13. Regional, spinal, epidural and nerve blocks

Drugs used in anesthesia

Including agents
Muscles relaxants & reversal
Inhalational anesthesia
Sedatives, hypnotics, analgesics
Anticholonergic
Antihypertensive
Antiemetic
Drugs used in obstetrics

Anticholonergic
Antihypertensive
Antiemetic
Drugs used in obstetrics
Antiallergic drugs
Antiallergic drugs
Steroids
Drugs used in cardiac arrest, shock
Miscellaneous drugs
Drugs used in local blocks, spinal & epidural

Gases

Oxygen, nitrous oxide, carbon dioxide, cyclopropane, nitrogen
Cylinders- handing and care. Types and size of cylinders
Central Gas Pipe line

Boyle's apparatus

Face mask, vaporizers etc.
Supply of compressed Gases, Liquid Oxygen storage and supply system, methods or reducing these Gases to workable pressure, structure or reducing valve
Methods of vaporizing volatile anesthesia agents, maintenance & safety precautions
Types of circuits- open, semi closed & closed circuits.
Non recreating value T-piece, to &FRO system
Type of value used in different circuits.
Resuscitators (ambo back, silicon bag etc)

Incubating Equipments

Laryngoscopes, End tracheal tubes, tube connections, Magill forceps, bite block equipment for difficult intubation, styled, bogie, Mc Coy laryngoscope, LMA, fiber
Optic bronchoscope, air ways, kombi tube, crick-thyrodecomy selection, cleaning & sterilization

Monitoring Equipment

Stethoscope, B.P. apparatus, esophageal stethoscope, plus ox meter, multimonitor, ECG and Gas meter, Gas monitor, temperature

Instruments used in Anesthesia

Anesthesia Ventilator, infusion pump suction catheters, canola, spinal & epidural needles
IV fluids
Preparations of L.V. drip types of fluid, precautions, allergic reaction, and blood transfusion.
Setting of Anesthesia trolley for different types of anesthesia
Setting trolley for CRP Training in basic life support, advance life support
Suction machine, diathermy machine, defibrillator, baby resuscitation trolley, for difficult intubation.
Anesthesia in different surgeries
G.I., Genitourinary, ENT, eye, neuron, plastic, obstetric & genie, paid neonates. Cardio-pulmonary, ortho etc

Technical terms used in Anesthesia.
Anesthesia in special problematic surgical/diagnostic procedures
Blood warming, preservation, checking.
Pain path ways Techniques and relief, various nerve blocks and agents
Recent advances.

ENT EYE AND NURSING CARE

Give broad ideas about the surgery with emphasis on position, instruments required and Assistant's role in keeping & maintenance of microscopes etc.

1. Tonsil & adenoids
2. Septoplasty, mastoid & Tympanoplasty
3. Instruments & positions
4. Tracheotomy, Laryngectomy, tracheal repair.

Eye Surgery

Broad idea about surgery but emphasis on role of technician as assistant in position, banding, preparation of instruments, cataract, squint, penetrating injury, syringing etc

Special Equipment:

Endoscope, bronchoscope, orsophago scope, fiberscope, laparoscope, cyst scope, imaging equipment, x-ray & c-arm, ultrasound care maintenance and sterilization

Nursing care

Pre-operative management of patient
Post-operative management of patient
PACU: Post Anesthesia care unit
Transportation of critically ill Transportation ambulance
Shifting patients, monitoring of vital functions, detection of life threatening problems, e.g., shock respiratory failure, vomiting etc.
Transportation of patient to and from the operation theatre

GYNE & OBSTETRIC

1. Introduction of gyne & obstetric instruments used in normal delivery, forceps etc
2. LSCS including instruments required, Emergency LSCS
3. Neonatal Resuscitation

Pain relief in labor
MTP & Cauterization of Cx, D&c, hysterectomy
Abdominal, vaginal & lap assisted (LAVH)
Laparoscopic sterilization, Laparocator & Laparoscope
Diagnostic aids in pregnancy and labor
Ectopic pregnancy

SURGICAL TECHNIQUES

1. Infection- General Principles of asepsis. Specific infections like tetanus, gas gangrene, cellulites, carbuncle, abscess etc.
2. Dressing, sutures, bandages & plasters.
3. Give broad ideas about the following, with emphasis on surgical positions, instruments required in the case and role of assistant:
   Swelling in necks
   G.I. surgery e.g. prostate, kidney stones
   Plastic surgery-burns, graft etc.
   Hemorrhoids, fistula, fissure etc
4. Preparation of patient, aseptic techniques & draping.
5. Universal precaution for HIV positive, Hb As Antigen.