

Revised Syllabus
For
D.O.T.T.
Diploma in Operation Theater
Technician



**LAL BAHADUR SHASTRI HEALTH SCIENCES
AND TECHNICAL COUNCIL, INDIA**

लाल बहादुर शास्त्री आरोग्य विज्ञान एवं प्राविधिक परिषद, भारत

मुख्य कार्यालय : 4वीं मंजिल, प्राइम प्लाजा, इंदरा नगर, लखनऊ

प्रशासनिक कार्यालय : द्वितीय तल, सुनील कम्पलेक्स, वेस्टर्न कचेरी रोड, मेरठ

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Exam :March and Aprail
(To be implemented from 2026-27 session)

Syllabus Of “D.O.T.T. ” Diploma in Operation Theater Technician

First Year (1st Year)

S.NO	Subject	Distribution Of Mark			
		TH	PR	Viva -Voce	Total
DOTT-101	Anatomy & Physiology	100	-	-	100
DOTT-102	Pathology	100	-	-	100
DOTT-103	Basic Sciences	100	-	-	100
DOTT-104	Emergency Management	100	-	-	100
DOTT-105	Practical - I (Basic OT Skills, Equipment & Lab)	-	100	-	100
	Total	-	-	-	500

Second Year (2nd Year)

S.NO	Subject	Distribution Of Mark			
		TH	PR	Viva -Voce	Total
DOTT-201	Surgical Technique	100	-	-	100
DOTT-202	Microbiology	100	-	-	100
DOTT-203	ENT, Eye & Nursing Care	100	-	-	100
DOTT-204	Gyne & Obstetric	100	-	-	100
DOTT-205	Practical - II (Advanced OT Assisting & Clinical Viva)	-	100	-	100
	Total	-	-	-	500

First Year (1st Year)

➤ DOTT-101 – ANATOMY & PHYSIOLOGY

Unit 1 – Organization of the Human Body & Tissues: Anatomical terms, planes, quadrants, body cavities; cellular organelles and cell division; classification, histology, and functions of primary tissues (Epithelial, Connective, Muscular, Nervous).

Unit 2 – Osteology, Arthrology & Surgical Landmarks: Structure and classification of bones of axial and appendicular skeleton; types of joints; major surface landmarks of skull, spine, thorax, abdomen, pelvis, and extremities relevant to surgical incisions.

Unit 3 – Muscular System & Fascial Compartments: Structure and action of major muscle groups (Neck, Chest, Abdominal wall - Rectus abdominis, Oblique muscles; Perineum, Limbs); surgical muscle splitting vs cutting incisions.

Unit 4 – Circulatory System & Surgical Hemodynamics: Anatomy of heart, major blood vessels (Aorta, Carotid, Subclavian, Femoral, Iliac vessels), systemic and pulmonary circulation, arterial blood pressure, cardiac output, venous return, central venous pressure.

Unit 5 – Blood Composition & Coagulation: Composition of blood (RBCs, WBCs, Platelets, Plasma), haemoglobin, blood groups (ABO & Rh), physiological mechanism of blood clotting, clotting factors, bleeding time, and clotting time.

Unit 6 – Respiratory System & Airway Anatomy: Anatomy of upper and lower respiratory tracts (Nasal cavity, Pharynx, Larynx, Vocal cords, Trachea, Bronchial tree, Lungs, Pleura); mechanics of respiration, alveolar gas exchange, lung volumes and capacities.

Unit 7 – Digestive System & Abdominal Viscera: Anatomy of gastrointestinal tract (Oral cavity, Oesophagus, Stomach, Duodenum, Jejunum, Ileum, Appendix, Colon, Rectum); Hepatobiliary system (Liver, Gallbladder, Biliary tree, Pancreas, Spleen); peritoneum, mesentery, and greater/lesser omentum.

Unit 8 – Excretory (Renal) System: Gross anatomy and relations of Kidneys, Nephron structure, Ureters, Urinary bladder, Male and Female Urethra; mechanism of urine formation, GFR, and fluid/electrolyte balance.

Unit 9 – Nervous & Endocrine Systems: Central nervous system (Cerebrum, Cerebellum, Brainstem, Spinal cord, Meninges, CSF circulation), Autonomic nervous system (Sympathetic & Parasympathetic); overview of Pituitary, Thyroid, Parathyroid, and Adrenal glands.

Unit 10 – Female & Male Reproductive Systems: Anatomy of Female reproductive organs (Uterus, Fallopian tubes, Ovaries, Vagina, Perineum); Male reproductive organs (Testes, Vas deferens, Prostate gland, Urethra); pelvic floor anatomy.

➤ **DOTT-102 – PATHOLOGY**

Unit 1 – General Pathology & Cellular Responses: Causes and mechanisms of cell injury (Hypoxia, Free radicals, Toxins); cellular adaptations (Atrophy, Hypertrophy, Hyperplasia, Metaplasia); Necrosis (Coagulative, Liquefactive, Caseous, Fat necrosis) and Apoptosis.

Unit 2 – Inflammation & Surgical Wound Healing: Acute inflammation (Vascular events, Cellular events, Chemotaxis, Phagocytosis, Exudate formation); Chronic inflammation and Granuloma; Primary and Secondary intention wound healing, Factors delaying healing, Keloid and Hypertrophic scar formation.

Unit 3 – Hemodynamic Disorders, Thrombosis & Embolism: Hyperemia, Congestion, Edema pathogenesis; Hemostasis and mechanism of Thrombosis (Virchow's triad); Embolism (Thromboembolism, Fat embolism, Air embolism, Amniotic fluid embolism); Infarction; Pathophysiology of Shock (Hypovolemic, Septic, Cardiogenic, Anaphylactic).

Unit 4 – Neoplasia & Tumor Pathology: Definition, Classification of tumors (Benign vs Malignant); Characteristics of malignant cells (Anaplasia, Metastasis, Invasion); Routes of tumor spread (Lymphatic, Hematogenous, Transcoelomic); Staging and Grading of tumors; Carcinogenesis.

Unit 5 – Clinical Haematology in Surgical Patients: Anemia (Iron deficiency, Megaloblastic, Hemolytic); Leukocytosis, Leukopenia, Thrombocytopenia; Pre-operative bleeding risk assessment; Complete Blood Count (CBC), ESR, Peripheral smear.

Unit 6 – Blood Banking & Transfusion Medicine: Blood collection, Storage of Whole Blood and Components (Packed Red Blood Cells / PRBC, Fresh Frozen Plasma / FFP, Platelet Concentrates, Cryoprecipitate); Cross-matching, Screening for transfusion-transmissible infections; Transfusion reactions (Acute hemolytic, Febrile non-hemolytic, Allergic) and their emergency management.

Unit 7 – Coagulation Profile & Anticoagulant Monitoring: Prothrombin Time (PT), International Normalized Ratio (INR), Activated Partial Thromboplastin Time (aPTT), Thrombin Time (TT), Fibrinogen levels, D-Dimer; Monitoring Heparin and Warfarin therapy before and after surgery.

Unit 8 – Surgical Pathology Specimen Handling: Collection, Labeling, Fixation (10% Neutral Buffered Formalin), and Preservation of surgical biopsy specimens; Frozen section biopsy principles and rapid transport to histopathology laboratory.

Unit 9 – Diagnostic Clinical Biochemistry: Blood Glucose (Fasting, Postprandial, Random), Liver Function Tests (Bilirubin, SGOT, SGPT, ALP, Total Protein, Albumin), Renal Function Tests (Urea, Creatinine), Serum Electrolytes (Na⁺, K⁺, Cl⁻, Calcium), and Arterial Blood Gas (ABG) analysis.

Unit 10 – Urinalysis & Body Fluid Examination: Routine and microscopic urinalysis (Sugar, Protein, Ketones, Bile salts, Pus cells, RBCs, Casts); Examination of peritoneal fluid (Ascitic tap), pleural fluid, and synovial fluid in surgical emergencies.

➤ **DOTT-103 – BASIC SCIENCES**

Unit 1 – Physics Applied to Operation Theater: Units of measurement (Pressure, Volume, Flow, Temperature); Gas laws (Boyle's, Charles's, Dalton's law of partial pressures, Gay-Lussac's law, Henry's law) and their application in anesthesia and gas cylinders; Fluid mechanics (Laminar vs Turbulent flow, Poiseuille's equation, Bernoulli principle, Venturi effect).

Unit 2 – Medical Gas Pipeline System (MGPS): Color coding of medical gas cylinders (Oxygen - Black body with White shoulder; Nitrous Oxide - Blue; Carbon Dioxide - Grey; Medical Air - White/Grey; Suction - Yellow); Manifold room design, Central pipeline distribution, Area valve service units (AVSU), Pin Index Safety System (PISS), Diameter Index Safety System (DISS), and Oxygen concentrator plants.

Unit 3 – Electricity & Electrical Safety in the OT: Basics of AC and DC electricity, Voltage, Current, Resistance; Macroshock vs Microshock hazards; Isolated Power Supply (IPS), Line Isolation Monitor (LIM), Ground fault circuit interrupters (GFCI), Static electricity prevention, and Equipotential earthing in OT.

Unit 4 – Electrosurgical Units (Cautery / ESU): Monopolar vs Bipolar electrosurgery; Principles of Cutting, Coagulation, and Fulguration waveforms; Patient return electrode (cautery pad) placement rules, Avoidance of electrosurgical burns, Radiofrequency hazards in patients with cardiac pacemakers, Advanced energy devices (Ultrasonic scalpel / Harmonic, Vessel sealing / LigaSure).

Unit 5 – OT Environmental Control, Heating & Ventilation (HVAC): OT ventilation standards (Laminar Air Flow - LAF); Positive pressure ventilation (maintaining +2.5 to +5 Pa pressure gradient); High-Efficiency Particulate Air (HEPA) filters (99.97% efficiency at 0.3 microns); Air changes per hour (minimum 20 to 25 ACH); Temperature (20°C to 24°C) and Humidity (40% to 60%) regulation.

Unit 6 – Anesthesia Machine & Vaporizers: Components of Anesthesia Workstation: High pressure, Intermediate pressure, and Low pressure systems; Flowmeters (Rotameters), Oxygen flush valve, Fail-safe system, Hypoxic guard; Anesthetic Vaporizers (Selectatec manifold, Temperature compensated, Agent-specific - Isoflurane, Sevoflurane, Halothane, Desflurane).

Unit 7 – Anesthetic Breathing Circuits & Scavenging: Open, Semi-closed, and Closed circuits (Mapleson classification A, B, C, D, E, F / Jackson-Rees); Circle absorber system, Soda lime & Barium lime composition and carbon dioxide absorption chemistry; Active and Passive Anesthetic Gas Scavenging Systems (AGSS).

Unit 8 – Operating Table, Surgical Lights & OT Furniture: Mechanisms and controls of electro-hydraulic Operating Tables; Table attachments (Arm boards, Lithotomy stirrups, Shoulder rests, Lateral supports, Head rings); Surgical shadowless LED OT lights, Lux intensity, Color rendering index (CRI), Suction machines (pipeline and portable electric suction).

Unit 9 – Chemistry of Disinfectants & Antiseptics: Chemical structure and mechanisms of Glutaraldehyde (Cidex 2%), Ortho-phthalaldehyde (OPA), Hydrogen peroxide, Peracetic acid, Formaldehyde, Alcohol (70% Isopropanol/Ethanol), Povidone-iodine, Chlorhexidine gluconate, and Quaternary ammonium compounds.

Unit 10 – Radiation Safety & Laser Physics in OT: Physics of X-rays, C-Arm Fluoroscopy operation; Radiation protection principles (Time, Distance, Shielding - ALARA principle), Lead aprons, Thyroid shields, Gonadal shields, TLD radiation monitoring badges; Surgical Lasers (CO₂, Nd:YAG, Holmium, Diode lasers), Laser safety goggles, and Fire safety in OT.

➤ **DOTT-104 – EMERGENCY MANAGEMENT**

Unit 1 – Principles of Emergency Medical Care & Triage: Definition, priorities of emergency resuscitation, Triage systems in disaster and mass casualty events (Simple Triage and Rapid Treatment - START protocol: Red, Yellow, Green, Black tags), Primary and Secondary survey (ATLS guidelines).

Unit 2 – Cardiopulmonary Resuscitation (CPR) & Advanced Cardiac Life Support (ACLS): Step-by-step adult, pediatric, and infant Basic Life Support (BLS); Chest compressions, Airway opening, Rescue breathing; Automated External Defibrillator (AED) operation; In-hospital resuscitation (Code Blue team activation), ACLS algorithms for VF/pVT, Asystole, and PEA; Defibrillator and Synchronized Cardioversion operation.

Unit 3 – Airway Emergencies & Difficult Airway Management: Recognition of acute airway obstruction, Stridor, Laryngospasm, Bronchospasm; Airway adjuncts (Oropharyngeal / Guedel airway, Nasopharyngeal airway); Endotracheal intubation technique, Laryngeal Mask Airway (LMA), Video laryngoscopy, Bougie, Fiberoptic intubation; Emergency surgical airway (Cricothyroidotomy and Tracheostomy).

Unit 4 – Management of Massive Hemorrhage & Hypovolemic Shock: Classification of hemorrhage (Classes I to IV); Clinical features of hypovolemic shock; Massive Transfusion Protocol (MTP: 1:1:1 ratio of PRBC, FFP, Platelets); Rapid infusers, Blood warmers, Pressure infuser bags, Central venous cannulation assistance, Intraosseous access.

Unit 5 – Intra-Operative Anaphylaxis & Drug Reactions: Etiology (Neuromuscular blockers, Latex, Antibiotics, IV contrast, Colloids); Clinical features (Sudden hypotension, Bronchospasm, Angioedema, Rash); Emergency protocol: Discontinuing offending agent, 100% Oxygen, IV Epinephrine (Adrenaline) dosage and dilution, IV Fluids, Hydrocortisone, Antihistamines.

Unit 6 – Malignant Hyperthermia (MH) Crisis: Pathophysiology (Triggered by Volatile anesthetics and Succinylcholine, RYR1 receptor mutation); Clinical triad (Unexplained hypercarbia / rising ETCO₂, Tachycardia, Muscle rigidity / masseter spasm, Hyperthermia); Emergency management: Hyperventilation with 100% O₂, Dantrolene sodium reconstitution and dosing, Active cooling protocols, Blood gas and potassium correction.

Unit 7 – Management of Acute Trauma & Burns: Assessment of polytrauma, Spinal immobilization (Cervical collar, Spine board, Log roll technique); Tension pneumothorax (Emergency needle decompression and Intercostal Chest Tube Drainage - ICD); Flail chest,

Cardiac tamponade (Beck's triad, Pericardiocentesis); Burns management (Rule of Nines, Parkland fluid formula, Escharotomy).

Unit 8 – Accidental Poisoning & Toxic Ingestion: Emergency assessment of toxic ingestion (Organophosphates, Corrosives, Sedatives, Carbon Monoxide); Gastric lavage technique, Activated charcoal administration; Specific antidotes (Atropine, Pralidoxime / PAM, Naloxone, Flumazenil).

Unit 9 – Environmental Emergencies & Electrical Injuries: Heat stroke, Hypothermia, Drowning, Near-hanging, Electric shock and Lightning strikes; Initial resuscitation, Arrhythmia management, Rewarming/cooling protocols, and Compartment syndrome assessment.

Unit 10 – Emergency Crash Cart Maintenance & OT Disaster Preparedness: Composition, Organization, and Daily checklist of Emergency Crash Cart (Emergency drugs, Intubation tray, Defibrillator, Suction, IV cannulas, Syringes); OT Fire safety protocols (RACE and PASS acronyms, Surgical fire prevention during oxygen/cautery use), Hospital evacuation drills.

➤ **DOTT-105 – PRACTICAL - I (BASIC OT SKILLS, EQUIPMENT & LAB)**

Unit 1 – OT Zoning, Layout & Attire: Demonstration of OT zones (Protective, Clean, Sterile, Disposal zones); Proper scrub attire, Cap, Mask, Eye protection, Shoe covers; Scrubbing room protocols.

Unit 2 – Surgical Hand Scrubbing & Drying: Surgical scrub technique (WHO / CDC 5-minute timed scrub and stroke count method) using Chlorhexidine / Povidone-iodine; Aseptic hand drying with sterile towel.

Unit 3 – Gowning & Gloving Techniques: Self-gowning (Closed gowning technique), Assisted gowning of surgeons; Closed and Open gloving techniques; Maintaining sterile front and avoiding contamination.

Unit 4 – Basic Surgical Instruments Identification: Identification, handling, and classification of Cutting instruments (Scalpel handles #3, #4, Blades #10, #11, #12, #15, #20, Mayo scissors, Metzenbaum scissors); Grasping instruments (Plain/Toothed dissecting forceps, Allis tissue forceps, Babcock forceps, Lane tissue forceps); Clamping instruments (Mosquito artery forceps, Kelly forceps, Crile forceps, Kocher forceps); Retractors (Langenbeck, Deaver, Morris, Czerny, Self-retaining retractors).

Unit 5 – Suture Materials & Needles Demonstration: Classification and handling of Absorbable sutures (Catgut, Vicryl / Polyglactin 910, Monocryl, PDS) and Non-absorbable sutures (Silk, Nylon / Ethilon, Prolene, Stainless steel); Needle types (Cutting, Reverse cutting, Round bodied / Taper point, Blunt point); Needle holders handling.

Unit 6 – Operating Table & Patient Positioning Practice: Demonstration of standard surgical positions on operating table: Supine, Trendelenburg, Reverse Trendelenburg,

Lithotomy, Prone, Lateral kidney/chest position, Jackknife, Sitting position; Safety straps, Padding pressure points, Nerve injury prevention.

Unit 7 – Medical Gas Cylinders & Anesthesia Machine Checks: Inspection of oxygen, nitrous oxide, and air cylinders; Checking pipeline connections, Pin index verification, Testing oxygen flush, Checking vaporizer levels, Soda lime replacement in circle absorber.

Unit 8 – Cautery (ESU) & Suction Apparatus Setup: Connecting Monopolar and Bipolar electrosurgical units, Cautery patient plate application on vascular muscular area, Testing foot switch/hand switch, Connecting suction tubing, canisters, and testing negative pressure.

Unit 9 – Basic Clinical Laboratory Testing: Hands-on blood grouping (ABO & Rh slide test), Estimation of Haemoglobin (Sahli's method), Blood glucose estimation by Glucometer, Urine routine testing (Dipstick for Protein, Glucose, Ketones).

Unit 10 – Basic Life Support (BLS) & Emergency Crash Cart Inspection: Hands-on adult and child CPR demonstration on mannequin, operating AED, checking Defibrillator pads/paddles, checking Emergency Crash Cart drugs and logbook verification.

Second Year (2nd Year)

➤ DOTT-201 – SURGICAL TECHNIQUE

Unit 1 – Principles of Surgical Asepsis & Draping: Creation and maintenance of sterile field; Skin preparation protocols (Povidone-iodine, Chlorhexidine in 70% alcohol, Chloraprep); Surgical draping techniques for Laparotomy, Extremities, Head and Neck, and Perineum; Towel clips, Incise drapes (Ioban).

Unit 2 – Surgical Incisions & Abdominal Wall Closure: Types of abdominal incisions (Midline, Paramedian, Kocher subcostal, McBurney gridiron, Pfannenstiel, Thoraco-abdominal); Layer-by-layer anatomy and closure techniques (Peritoneum, Linea alba, Anterior rectus sheath, Subcutaneous tissue, Skin staples and subcuticular sutures).

Unit 3 – General Surgical Procedures (GI & Hepatobiliary): OT setup, instrument trolley preparation, and surgical assisting in Appendectomy, Open & Laparoscopic Cholecystectomy, Hernioplasty (Inguinal, Umbilical, Incisional), Exploratory Laparotomy for bowel perforation/obstruction, Gastrectomy, and Hemorrhoidectomy.

Unit 4 – Minimal Access Surgery (Laparoscopy / Endoscopy): Components of Laparoscopic Tower: HD/4K Camera system, Light source (Xenon/LED) & Fiberoptic cable, CO2 Electronic Insufflator, Veress needle, Trocars and Cannulas (5mm, 10mm, 12mm), Laparoscopic instruments (Maryland dissector, Graspers, Scissors, Clip applicators, Endo-bag); Principles of pneumoperitoneum, Troubleshooting laparoscopic equipment.

Unit 5 – Orthopedic Surgical Procedures: OT setup, Traction table, C-Arm image intensifier handling; Assisting in Fracture fixation (Open Reduction and Internal Fixation - ORIF with DCP, LC-DCP plates, Intramedullary Interlocking Nailing - IMILN, K-wires, External fixators); Arthroplasty (Total Hip Replacement - THR, Total Knee Replacement -

TKR); Orthopedic bone drills, Reamers, Bone cement (PMMA) preparation, Tourniquets (Pneumatic tourniquet application and timing).

Unit 6 – Urology Surgical Procedures: Endourology setup: Cystoscopy, Ureterorenoscopy (URS), Transurethral Resection of Prostate (TURP), Transurethral Resection of Bladder Tumor (TURBT), Percutaneous Nephrolithotomy (PCNL); Continuous irrigation fluids (Glycine 1.5%, Sterile Saline) and TURP syndrome prevention; Open nephrectomy, Pyelolithotomy.

Unit 7 – Cardiothoracic & Vascular Surgery (CTVS) Basics: Assisting in Thoracotomy, Lobectomy, Pneumonectomy, Intercostal Drain (ICD) insertion and underwater seal management; Overview of Cardiopulmonary Bypass (CPB) heart-lung machine, Median sternotomy, Sternal saw and wires; Vascular procedures (Embolectomy with Fogarty catheter, AV Fistula creation, Varicose vein stripping).

Unit 8 – Neurosurgical Procedures Basics: Neurosurgical OT setup, Mayfield skull clamp, Craniotomy for extradural/subdural hematoma, Brain tumor excision, Ventriculoperitoneal (VP) shunt insertion, Laminectomy and Microdiscectomy; Neuro-microscope setup, Bipolar cautery, Neuro-surgical patties, Bone wax, Hemostatic agents (Surgicel, Gelfoam, Fibrin glue).

Unit 9 – Plastic & Reconstructive Surgery: Split-Thickness Skin Grafting (STSG - Humby knife, Dermatome, Mesher), Full-Thickness Skin Grafting (FTSG), Flap surgeries, Cleft lip and palate repair, Burn contracture release, Tendon repair.

Unit 10 – Post-Operative Wound Drainage & Dressings: Types of surgical drains: Open drains (Corrugated rubber drain), Closed suction drains (Romovac / Jackson-Pratt drain, Redivac, Pigtail catheter); Indications, Insertion assistance, Monitoring drainage volume, Aseptic surgical dressings, and Suture/Staple removal.

➤ **DOTT-202 – MICROBIOLOGY**

Unit 1 – Classification & Morphology of Microorganisms: Overview of medical bacteria (Cocci, Bacilli, Spirochaetes); Gram-positive organisms (Staphylococcus aureus, Streptococcus pyogenes, Enterococcus, Clostridium tetani, Clostridium perfringens); Gram-negative organisms (E. coli, Klebsiella, Pseudomonas aeruginosa, Proteus, Acinetobacter); Acid-Fast Bacilli (Mycobacterium tuberculosis).

Unit 2 – Surgical Virology & Blood-Borne Pathogens: Structure, transmission, and universal precautions for Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), and Human Immunodeficiency Virus (HIV); Post-Exposure Prophylaxis (PEP) protocol for needle-stick and splash injuries in OT; Viral transmission of Cytomegalovirus (CMV), Rabies, and Coronaviruses.

Unit 3 – Medical Mycology & Anaerobic Infections: Fungal pathogens in surgical patients (Candida albicans, Aspergillus, Mucorales / Mucormycosis); Anaerobic spore-forming and non-spore-forming bacteria; Pathogenesis of Gas Gangrene, Tetanus, and Necrotizing Fasciitis.

Unit 4 – Physical Methods of Sterilization: Principles, temperature, pressure, holding time, and cycles of Steam Sterilization (Autoclaving - Gravity displacement and Pre-vacuum autoclaves); Dry Heat Sterilization (Hot air oven); Radiation sterilization (Gamma radiation for disposable plastics).

Unit 5 – Chemical & Low-Temperature Sterilization: Ethylene Oxide (ETO) gas sterilization (gas concentration, humidity, aeration cycle, safety hazards); Hydrogen Peroxide Gas Plasma (Sterrad system - rapid cycle, mechanism); Formaldehyde gas sterilizers; Liquid chemical sterilants (Glutaraldehyde 2% / Cidex, Peracetic acid).

Unit 6 – Sterilization Monitoring & Quality Control: Physical indicators (gauges, digital printouts); Chemical indicators (Classes 1 to 6 - Bowie-Dick test for air removal, internal chemical strips); Biological indicators (*Geobacillus stearothermophilus* for autoclaves, *Bacillus atrophaeus* for ETO/Dry heat); Recall procedures for failed sterilization.

Unit 7 – Operation Theater Disinfection & Fumigation: Routine daily, weekly, and terminal cleaning of OT; Surface disinfection protocols; OT air sampling (Settle plate method, Air sampler); Fogging and vaporized hydrogen peroxide (VHP) vs formal-glycerin fumigation.

Unit 8 – Surgical Site Infections (SSI) & Surveillance: Definition, CDC classification (Superficial incisional, Deep incisional, Organ/Space SSI); Risk factors (Patient factors, Surgical factors, Environmental factors); Prevention bundles (Pre-operative hair clipping vs shaving, Skin antiseptic, Prophylactic antibiotic timing, Intra-operative normothermia, Glycemic control).

Unit 9 – Hospital-Acquired Infections (HAI) & Multi-Drug Resistance: Catheter-Associated Urinary Tract Infections (CAUTI), Central Line-Associated Bloodstream Infections (CLABSI), Ventilator-Associated Pneumonia (VAP); Multi-drug resistant organisms (MRSA, VRE, ESBL producers, CRE / Carbapenem-resistant Enterobacteriaceae); Antimicrobial stewardship.

Unit 10 – Biomedical Waste Management (BMW) Rules: Segregation at source, color coding of bins: Yellow (Anatomical waste, soiled dressings, infected linen), Red (Contaminated plastics - tubing, IV bottles, catheters, syringes without needle), Blue (Glassware, ampoules, metallic implants), White translucent puncture-proof container (Sharps - needles, blades, scalpels); Safe handling and transport.

➤ **DOTT-203 – ENT, EYE & NURSING CARE**

Unit 1 – ENT Surgical Anatomy & Specialized Instrumentation: Surgical anatomy of Ear, Nose, Paranasal sinuses, Pharynx, Larynx, and Trachea; Specialized ENT instruments: Boyle-Davis mouth gag, Tonsillectomy snare, Hartmann forceps, Tilley nasal forceps, Jansen-Middleton septum forceps, Mastoid retractor, ENT operating microscope and micro-drills.

Unit 2 – Ear & Mastoid Surgical Procedures: OT setup and assisting in Myringotomy with Grommet insertion, Tympanoplasty (Underlay and Overlay techniques), Mastoidectomy

(Cortical, Modified Radical, Radical), Stapedectomy; Microscopic instrument handling, Suction irrigation, Bone dust management.

Unit 3 – Nasal & Throat Surgical Procedures: Assisting in Septoplasty, Submucous Resection (SMR), Functional Endoscopic Sinus Surgery (FESS - Endoscopic camera, Microdebrider, Sinus curettes), Polypectomy, Tonsillectomy (Dissection & Snare, Coblation, Cautery), Adenoidectomy, Tracheostomy (Emergency and Elective).

Unit 4 – Ophthalmic Surgical Anatomy & Eye OT Protocols: Surgical anatomy of the Orbit, Cornea, Anterior chamber, Iris, Crystalline lens, Retina, Conjunctiva, Lacrimal apparatus; Ophthalmic OT sterile protocol, Eye speculums (Lieberman, Barraquer wire speculum), Ophthalmic micro-instruments (Castroviejo needle holder, Vannas scissors, Utrata capsulorhexis forceps, McPherson forceps).

Unit 5 – Ophthalmic Surgical Procedures: Assisting in Cataract Surgeries: Small Incision Cataract Surgery (SICS) with Intraocular Lens (IOL) implantation, Phacoemulsification (Phaco machine setup, ultrasonic handpiece, irrigation-aspiration, viscoelastic substances - HPMC, Sodium Hyaluronate); Glaucoma surgery (Trabeculectomy); Pterygium excision with conjunctival autograft; Keratoplasty (Corneal graft); Vitrectomy basics; Dacryocystorhinostomy (DCR).

Unit 6 – Perioperative Nursing & Pre-Operative Preparation: Role of the Perioperative Nurse and OT Technician; Pre-operative patient identification, Surgical Safety Checklist (WHO Safe Surgery Saves Lives: Sign In, Time Out, Sign Out); Fasting status (NPO guidelines), Pre-medication, Bowel preparation, Removal of jewelry and dentures, Pre-operative shaving/clipping.

Unit 7 – Intra-Operative Nursing & Scrub / Circulating Roles: Duties of Scrub Technician: Setting up sterile Mayo trolley, Anticipating surgeon needs, Instrument passing technique, Maintaining sterile integrity; Duties of Circulating Technician: Patient positioning, Connecting suction/cautery, Maintaining swab and instrument count (Initial, Cavity, and Skin closure counts), Specimen handling.

Unit 8 – Post-Operative Nursing & PACU Management: Handover of patient to Post-Anesthesia Care Unit (PACU / Recovery Room); Monitoring ABCs, Aldrete scoring system, Oxygen therapy, Airway management, Vital signs monitoring (BP, Pulse, SpO₂, ECG); Management of post-operative pain, nausea, vomiting, shivering, hypothermia, and agitation.

Unit 9 – Fluid, Electrolyte & Intravenous Therapy in OT: Types of IV fluids: Crystalloids (Normal Saline 0.9%, Ringer Lactate / RL, Dextrose 5%, Isolyte-P/M) and Colloids (Hydroxylethyl starch, Gelatins, Albumin); Calculation of maintenance fluids, replacement of fasting deficit and third space surgical loss; Setting up peripheral IV cannulation (14G to 22G), IV sets, Microdrip sets, Infusion pumps, Syringe drivers.

Unit 10 – Basic Nursing Procedures for Surgical Patients: Urinary catheterization (Foley catheter insertion, aseptic technique, closed drainage system), Nasogastric (Ryle's) tube insertion and aspiration, Bedpan/Urinal placement, Prevention and management of pressure ulcers (Bedsore), Patient transfer and body mechanics.

➤ **DOTT-204 – GYNE & OBSTETRIC**

Unit 1 – Gynecological & Obstetric Surgical Anatomy: Pelvic anatomy: Uterus, Cervix, Fallopian tubes, Ovaries, Broad ligament, Round ligament, Uterine artery and its relation to ureter ('Water under the bridge'), Pelvic floor muscles, Vulva, Perineum, Pelvic blood supply and nerve innervation.

Unit 2 – Specialized Gynecological & Obstetric Instruments: Sims speculum, Cusco bivalve speculum, Doyen retractor, Auvard weighted vaginal speculum, Pozzi / Green-Armytage forceps, Heaney hysterectomy clamp, Wertheim clamp, Hegar uterine dilators, Uterine sound, Sharp and Flushing uterine curettes, Wrigley's and Kielland's obstetric forceps, Ventouse (Vacuum extractor) cups, Cord cutting scissors, Episiotomy scissors.

Unit 3 – Major Obstetric Surgical Procedures (Cesarean Section): Lower Segment Cesarean Section (LSCS) - Elective vs Emergency; Indications (Cephalopelvic disproportion, Fetal distress, Placenta previa, Breech, Previous CS); OT setup, Spinal/Epidural anesthesia assisting, Patient positioning with left lateral tilt (aortocaval decompression); Instrument trolley setup, Assisting during uterine incision, Delivery of baby, Cord clamping, Placenta removal, Uterine exteriorization and layer-by-layer closure.

Unit 4 – Minor Obstetric & Emergency Procedures: Episiotomy (Mediolateral vs Median) and repair of perineal tears (1st to 4th degree); Manual Removal of Placenta (MROP) under general anesthesia; Management of Postpartum Hemorrhage (PPH - Uterotonics: Oxytocin, Methylergometrine, Carboprost, Misoprostol; Balloon tamponade - Bakri balloon; B-Lynch uterine compression suture; Emergency Obstetric Hysterectomy).

Unit 5 – Immediate Newborn Resuscitation in OT: Receiving the newborn in pre-warmed sterile towel; Radiant warmer setup, Aspiration of mouth and nose with suction catheter / DeLee trap, Drying and stimulation; APGAR score evaluation at 1 and 5 minutes; Neonatal resuscitation protocol (Bag-and-mask ventilation, Chest compressions, Oxygenation, Vitamin K1 administration, Cord stump care).

Unit 6 – Major Gynecological Surgeries: Abdominal Hysterectomy (Total Abdominal Hysterectomy with Bilateral Salpingo-Oophorectomy - TAH-BSO); Vaginal Hysterectomy (with Anterior Colporrhaphy and Posterior Colpoperineorrhaphy / Pelvic floor repair); Radical Hysterectomy (Wertheim operation for cervical cancer); Myomectomy (Enucleation of uterine fibroids); Ovarian cystectomy and Oophorectomy.

Unit 7 – Minor Gynecological Procedures: Dilatation and Curettage (D&C), Dilatation and Evacuation (D&E), Fractional curettage, Cervical Biopsy, Endometrial Biopsy, Polypectomy, Bartholin cyst marsupialization and excision, Examination Under Anesthesia (EUA).

Unit 8 – Family Planning & Contraceptive Surgeries: Minilap Tubectomy (Pomeroy technique), Laparoscopic Tubal Ligation (Falope rings / Hulka clips); Intrauterine Contraceptive Device (IUCD / Copper-T / Multiload) insertion and removal; Medical Termination of Pregnancy (MTP - Suction evacuation technique, MVA / Manual Vacuum Aspiration syringe).

Unit 9 – Gynecological Endoscopy (Laparoscopy & Hysteroscopy): Diagnostic and Operative Gynecological Laparoscopy: Ectopic pregnancy management (Salpingectomy / Salpingostomy), Endometriosis ablation, PCOD ovarian drilling, Adhesiolysis; Diagnostic and Operative Hysteroscopy: Resectoscope, Uterine distension media (Normal Saline, Glycine), Submucous fibroid resection, Septum resection, Polypectomy.

Unit 10 – Labor Room & Maternity OT Management & Ethics: Sterility maintenance in labor room and obstetric OT; High-risk pregnancy protocols; Respectful maternity care (RMC); Management of obstetric shock, Eclampsia (Magnesium sulphate protocol); Handling bio-hazardous placenta and cord blood, Ethical issues in reproductive health, and PC-PNDT Act awareness.

➤ **DOTT-205 – PRACTICAL - II (ADVANCED OT ASSISTING & CLINICAL VIVA)**

Unit 1 – Advanced Instrument Trolley Setup: Assembling specialized instrument trolleys for Laparotomy, Cholecystectomy, Appendicectomy, Hernia repair, LSCS, Abdominal Hysterectomy, Orthopedic ORIF, ENT Tonsillectomy, and Eye Cataract surgery.

Unit 2 – Scrub Technician Clinical Assisting Practice: Hands-on scrub technician duties: Draping the patient, Passing instruments using standard hand signals, Loading blades on scalpel handles, Mounting sutures on needle holders, Handling surgical sponges/gauze with strict count procedures.

Unit 3 – Circulating Technician Clinical Duties: Operating non-sterile equipment, connecting laparoscopic camera and light cables, connecting monopolar/bipolar cautery and suction, conducting official WHO Surgical Safety Checklist (Time Out), and documenting surgical records.

Unit 4 – Autoclave Operation & Sterility Testing: Practical operation of Steam Sterilizers (Autoclaves), loading drum/cassettes, running cycles, interpreting chemical indicator tape color changes, Bowie-Dick test, and handling biological spore test vials.

Unit 5 – Laparoscopic Equipment Maintenance & Handling: Assembling laparoscope telescope, white balancing camera, connecting CO2 insufflation tubing, testing Veress needle spring mechanism, cleaning and enzymatic washing of laparoscopic instruments, gas plasma / ETO sterilization.

Unit 6 – Assisting in Anesthesia & Airway Management: Preparation of Anesthesia workstation, checking laryngoscope blades and bulbs, preparing endotracheal tubes (cuff testing), stylet, LMA, suction catheters, assisting during induction, intubation, extubation, and spinal/epidural anesthesia.

Unit 7 – Newborn Care & Resuscitation Simulation: Operating neonatal radiant warmer, suctioning, bag-and-mask ventilation on neonatal mannequin, APGAR score calculation, and cord clamping demonstration.

Unit 8 – PACU / Recovery Room Patient Monitoring: Monitoring vital signs on multi-parameter patient monitor (ECG, NIBP, SpO₂, Temperature, ETCO₂), oxygen mask/nasal cannula connection, airway clearing, and charting on recovery flowsheet.

Unit 9 – OT Environmental Testing & Swab Collection: Collecting environmental microbiological swabs from OT tables, walls, lights, and air sampling using settle plates for bacteriological culture verification.

Unit 10 – Clinical Internship Logbook, Case Records & Grand Viva-Voce: Verification of documented 50 major surgical case assisting records (General Surgery, Ortho, Gyne/Obs, ENT, Eye), practical skill evaluation on surgical instruments, and comprehensive viva-voce.

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