U.P. STATE MEDICAL FACULTY

Diploma in Central Sterile Supply Department (CSSD) Technician

DURATION: 2 YEARS

Distribution of Papers & Marks in Various Years

First Year

Paper	Subject	Ext. Marks	Int. Marks Max.	Marks	Passing Marks
Paper-I	Basics of Anatomy , Physiology and Biochemistry	75	25	100	50
Paper-II	Basics of Health System, Basics of Central Sterilization Services, Microbiology & Infection Control	75	25	100	50
Oral & Practical		75	25	100	50
	*Communicative English & Computer Fundamentals				

* Not included in state medical faculty examination

Second Year

Paper	Subject	Ext. Marks	Int. Marks Max.	Marks	Passing Marks
Paper-I	CSSD Equipment Handling & Maintenance And Fundamentals of Engineering	75	25	100	50
Paper-II	Central Sterilization Services, Assembly, Packaging, Storage & Distribution	75	25	100	50
Oral & Practical		75	25	100	50

Following subjects must be taught; though there will not be any exam from these:

1. Basic Computer skills. 2. Basic English. 3. Soft skills like. Interpersonal relationship skills & moral education.

Scope of CSSD Course:

1. This course is designed to prepare qualified Technician with specialized knowledge in principles of Engineering, Microbiology, and develop desirable

skill in applying this concept in sterilizing technique, managing the Gadgets in the CSSD.

2. This course will provide the essential skills required to work in a Hospital Central Sterile Supply Department (CSSD).
3. Trainee will learn in detail about the essential skills required to work in a hospital CSSD.
4. Trainee shall be exposed to basics of sterilization, operations and handling of sterilizers, documentation, quality control and sterilization practices.
5. The trainee will also learn the coordination of CSSD & Infection control.
6. CSSD technician will have gained the appropriate knowledge and skill to maintain the cleanliness, functionality and inventory of healthcare instrumentation and equipment.
7. Technician will gain necessary skills for sterilizing instrumentation and equipment through a series of critical steps.

Admission Criteria:

(a). Any candidate who has passed 10+2 with science background (PCB or PCM

(b) Both Male and Female aged 17 yrs and above

Course Duration: The duration shall be 2 years Full Time. The candidates admitted to this course would spend at least six hours a day and 30 hours per week in the college or hospital.

Medium of Instruction: English & Hindi shall be the medium of instruction

Hospital Posting: Being practical oriented programs the focus will be more for practical training. The candidate shall undergo a practical training in CSSD and Operation Theater.

Passing minimum: To pass a Candidate shall secure a minimum of 50% marks individually in the practical and Theory Examinations. A candidate failing in any one component will have to reappear for that particular component only in the supplementary examination.

Award of Internal Assessment Mark: Internal assessment marks for theory will be awarded based on the Marks obtained in the three Internal Assessment Tests.

Internal assessment marks for practical will be awarded based on the candidate's regular performance in the practical area (CSSD) and one practical exam marks.

First Year

PAPER-I: Basics of Anatomy, Physiology and Biochemistry

A. BASICS OF ANATOMY

1. Introduction to Anatomy: Basic Anatomical terminology
2. Osteology- Upper limb – clavicle, scapula, humerus, radius, ulna, Lower limb - femur, hipbone, sacrum, tibia, fibula & Vertebral column
3. Thorax – Intercostal space, pleura, bony thoracic cage, ribs sternum &thoracic vertebrae.

4. Lungs – Trachea, bronchial tree
5. Heart – Surface anatomy of heart, chambers of the heart, valves of the heart, and major blood vessels of heart, pericardium, and coronary arteries.
6. Skeleton-muscular system – Muscles of thorax, muscles of upper limb(arm & fore arm) Flexor and extensor group of muscles (origin, insertion, action)
7. Excretory system – Kidneys, ureters, bladder
8. Basic Features of Genital (Male & Female) system
9. Basic Features of Digestive system

Practical-

1. Identification and description of all anatomical structures.

2. The learning of Anatomy is by demonstration only through dissected parts, slides, models, charts etc.

3. Demonstration of dissected parts (upper extremity, lower extremity, thoracic & abdominal viscera, face and brain).

4. Demonstration of skeleton - articulated and disarticulated.

B. BASICS OF PHYSIOLOGY

1. Introduction to Human Physiology
2. The Cell: Structure & function
3. The Blood: Composition of Blood, functions of the blood and plasma proteins, Function of Haemoglobin. Erythrocyte Sedimentation Rate. Detailed description about WBC-Total count (TC), Differential count (DC) and functions. Platelets – formation and normal level and functions. Blood groups and Rh factor.
4. Cardio-Vascular System: Physiology of the heart, Heart sounds, Cardiac cycle, Cardiac output, Auscultation, Arterial pressures, blood pressure, Hypertension and Electro cardiogram (ECG.)
5. Respiratory system: Respiratory ventilation, Oxygenation, Definitions and Normal values of Lung volumes and Lung capacities.
6. Excretory system: Normal Urinary output, Renal function tests, renal disorders.
7. Reproductive system: Formation of semen and spermatogenesis, Brief account of menstrual cycle.

8. Central Nervous system: Motor Nervous system, Sensory nervous system, Sympathetic Nervous system and parasympathetic nervous system
9. Endocrine system: Functions of the pituitary, thyroid, parathyroid, adrenal and pancreatic Hormones.
10. Digestive system Physiological Anatomy of the GIT. Food Digestion in the mouth, stomach, intestine Absorption of foods Role of bile in the digestion.
11. Sense Organs

Practical-

1. Determination of Blood Groups.
2. Measurement of human blood pressure.
3. Examination of Respiratory system to count respiratory rate and measure inspiration and respiration.

C. BASICS OF BIOCHEMISTRY

1. Introduction to Basics of Bio-chemistry
2. Glassware and plastic ware used in a bio-chemical laboratory.
3. Instrumental methods of Bio-chemical analysis: Colorimetry, Spectrophotometry, Centrifugation, Filtration, Weighing, Evoporation and Distillation
4. Units of measurements, solutions: types based on solute and solvent, Types based on method of expressing concentration, calculations.
5. Carbohydrates: Definitions, Biological importance, Acid value, iodine value, saponification value.
6. Amino acids and Proteins Definition, Biological importance, Classification.
7. Basics of Enzymes
8. Chemistry of Proteins & their related metabolism (in brief)
9. Chemistry of Lipids & their related metabolism (in brief)
10. Vitamins and Minerals

Practical-

1. Laboratory organisation

2. Instruments, glassware, sample collection & specimen labelling, routine tests, anticoagulants, reagents, cleaning of glassware, isotonic solution, preparation of solution & interpretation of result, normal values.

3. Identification of Carbohydrates (qualitative tests).

4. Identification of Proteins (qualitative tests).

5. Uses, Care and Maintenance of various instruments of the laboratory.

PAPER- II: Basics of Health System, Basics of Central Sterilization Services, Microbiology & Infection Control

1. Healthcare delivery system in India: primary, secondary and tertiary care, Community participation in healthcare delivery system, Health system in developed countries, National Health Mission, National Health Policy, Issues in Health Care Delivery System in India.

2. Hospital Awareness, Medical terminologies and record keeping: A brief idea of hospital as on organization, management different units of a hospital, Maintenance of records, General patient care and Medical terminologies.

3. Organization of central sterile supply department – CSSD design considerations & Zoning, Functions of CSSD – Relationship of CSSD with the operation room, ICU, Emergency room and other wards.

4. Role and responsibilities of CSSD technician, work safety & standards.

5. Classification of Micro organisms – Brief morphological features of Microbes – General properties of Bacteria, Viruses and Fungus. Microbiology and its implication with respect to CSSD: Infection Control and Hygiene, Decontamination: Scientific Principles, Recommended Practices, Principles of Disinfection

6. Sterilization – Definition and classification, Various methods of sterilization, Preparation and sterilization of surgical packs disinfection – definition and classification, methods of disinfection, Principles of cleaning and disinfecting the rubber goods, glasswares, packs, linens, equipments.

7. Definition of Infection – Chain of infection – Sources of Microbes, Routes of Infection, and Mode of spread – Hospital acquired infection and prevention of hospital acquired infection – Immunity and its types. Use of Personal protective equipment (PPE), Monitoring & controlling of cross infection (Protective

devices). Components of an effective infection control program, and Guidelines (NABH and JCI) for Hospital Infection Control.

8. Bio medical waste management and environment safety: Definition of Biomedical Waste, Waste minimization, BMW – Segregation, collection, transportation, treatment and disposal (including color coding), Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste, BMW Management & methods of disinfection, Modern technology for handling BMW.

Practical:

1. Components & setting of the Compound microscope.
2. Focusing of object, Use of low & high power objectives of microscope and Use of oil immersion lens.
3. Care and Maintenance of the microscope.
4. Gram stain
5. Spore stain

Second Year

PAPER-I: CSSD Equipment Handling & Maintenance And Fundamentals of Engineering

1. Introduction to CSSD, Types of Sterilizer, Operating and Maintenance of - Steam Sterilizer (Autoclave (High speed, High pressure 134 °C) Autoclave (Low speed, Low pressure 121 °C)). Water Quality, Types of water, Types of treating water and Compressed Air - Operating & Maintenance (Preventive, Breakdown and Predictive) of gas sterilizers (ETO sterilizer, Hydrogen peroxide).
2. Role of CSSD in Health Care Delivery, Planning and layout
3. Operating & Maintenance (Preventive, Breakdown and Predictive) of Ultrasonic Cleaner, Operating & Maintenance of washer disinfector.
4. Basic electrical – Voltage, Current, Power, Fuse, Open circuit, Short circuit, Single Phase, Three Phase, Ground, Power factor. Electrical Components – Resistor, Capacitor and Inductor – Basic principle, various types and package, Effect in electrical line, connection (Series circuit connection and Parallel circuit connection) Application of each items.

5. Measurement of various electrical parameters – Voltage, Current, Power, Earth Voltage. Electrical power supply – Transformer, Principle, Construction, Different types of Transformers, Working, Various applications.

6. Safety Regulations and Quality control – Prevention and Precaution of Electrical Shock and Electrical Fire, Hazardous in gas sterilization, checking efficacy of steam sterilizer, Maintenance of records.

Practical:

1. Hospitals Visit at CSSD and Operation Theatre
2. Operating of Steam Sterilizer, Gas Sterilizer, Ultrasonic Cleaner and washer disinfector.
3. Measurement of Various Electrical Parameters like Voltage, Current, and power.
4. Carry out the Electrical connection of the equipment
5. Trouble shooting the minor Electrical Problems
6. Carry out the Preventive Maintenance Schedule in Steam Sterilizer, Gas Sterilizer, Ultrasonic Cleaner and washer disinfector.
7. Carry out the Predictive Maintenance of Steam Sterilizer, Gas Sterilizer, Ultrasonic Cleaner and washer disinfector.
8. Attend the Break down Maintenance of Steam Sterilizer, Gas Sterilizer, Ultrasonic Cleaner and washer disinfector Steam Sterilizer, Gas Sterilizer, Ultrasonic Cleaner and washer disinfector.

PAPER- II: Central Sterilization Services, Assembly, Packaging, Storage & Distribution

1. General observations principles of sterilization. Moist heat sterilization. Dry heat sterilization. E_2O gas sterilization, H_20_2 gas plasma vapor sterilization. Calculation of capacity requirement of sterilizer.
2. Sterilizer Operation, Sterilization Basic Trouble Shooting Methods, Sterilization Recommended Practices for Flash Sterilization, Call back system in case of detection of failure. Complete decontamination techniques, Confirmation of cleaning process, Monitoring techniques, Quality assurance program,

3. Surgical Instruments: Criteria for Purchase and Maintenance, Preparation and Supplies for Terminal Sterilization, Endoscopes and it's Sterilization, Surgical Procedures.
4. HAVC system and it's impact, water quality and its impact in CSSD process.
5. Collection of used items from user area, reception protective clothing and disinfections sage guards. Use of disinfections sorting and classification of equipment for cleaning purposes, sharps, blunt lighted etc. contaminated high risk baby care - delicate instruments or hot care instruments.
6. Cleaning process - use of detergents. Mechanical cleaning apparatus, cleaning instruments, cleaning jars, receivers bowls etc. trays, basins and similar hand ware utensils. Cleaning of catheters and tubing, cleaning glass ware, cleaning syringes and needles. Special precautions while handling instruments linen and other items used for patients with HIV, HBV or HCV.
7. Materials used for wrapping and packing assembling pack contents. Types of packs prepared. Inclusion of trays and gallipots in packs. Method of wrapping and making use of indications to show that a pack of container has been through a sterilization process date stamping.
8. Non-woven and Pouches, Packaging material – Textiles, Management of Surgical Linen, Packaging materials – Rigid Containers, Packaging selection and use, Packaging shelf life, Assembly of sets / Linen, Dressing Materials standard Recommendations.
9. Sterile storage area – Physical conditions, environmental controls, Shelf life and expiry, Transportation and distribution of sterile items, Inventory Management ,Tracking Systems, Documentation, Quality Indicators for CSSD, Establishing recall process, CSSD staff requirements & training, CSSD Audit Checklist and Quality Assurance in CSSD Department

Practical:

1. How to maintain perfect inventory, Basic administration, Safety features, Practical knowledge of Scientific Principles
2. Sterilizer Operation and monitoring – Independent action
3. Basic Trouble Shooting Methods
4. Newer trends in Sterilization – Plasma and Ozone sterilization Introduction

7. Practical knowledge on Quality assurance Monitoring system, Physical / Chemical / Biological Indicators – Monitoring and record maintenance

8. Practical knowledge on Sterile Storage and distribution, System of documentation, Sterilizer Validation, Inventory management of surgical instruments, Inventory management of consumables

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