

B.Sc. DEGREE IN CRITICAL CARE TECHNOLOGY

I YEAR SYLLABUS

Subjects – Teaching hours

Anatomy, Physiology and Lab Sciences -	80 hours
Communication skills in English	- 80 hours
Computer Skills	- 80 hours
Principles of Management	- 30 hours

	270 hours

Hospital Orientation & Training	1665 hours

BASIC ANATOMY

THEORY

Introduction to Anatomy

Basic Anatomical terminology

Osteology- Upper limb – clavicle, scapula, humerus, radius, ulna
Lower limb - femur, hipbone, sacrum, tibia, fibula
Vertebral column

Thorax – Intercostal space, pleura, bony thoracic cage, ribs sternum & thoracic vertebrae

Lungs – Trachea, bronchial tree

Heart – Surface anatomy of heart, chambers of the heart, valves of the heart, major blood vessels of heart, pericardium, coronary arteries.

Skeleto-muscular system – Muscles of thorax, muscles of upper limb (arm & fore arm) Flexor and extensor group of muscles (origin, insertion, action)

Excretory sytem – Kidneys, ureters, bladder

PRACTICALS

Mannequins to be provided for Teaching

Osteology – Bones identification (right and left side) and prominent features and muscle attachment of the bone, clavicle, scapula, radius, ulna, humerus, femur, hip bone, sacrum, tibia, fibula. Surface Anatomy, Radiology, X-ray Chest PA view

PHYSIOLOGY

THEORY

1) The Cell:

- (i) Cell Structure and functions of the various organelles.
- (ii) Endocytosis and exocytosis
- (iii) Acid base balance and disturbances of acid base balances (Alkalosis, Acidosis)

2) The Blood:

- (i) Composition of Blood, functions of the blood and plasma proteins, classification and protein.
- (ii) Pathological and Physiological variation of the RBC.
- (iii) Function of Hemoglobin
- (iv) Erythrocyte Sedimentation Rate.
- (v) Detailed description about WBC-Total count (TC), Differential count (DC) and functions.
- (vi) Platelets – formation and normal level and functions
- (vii) Blood groups and Rh factor

3) Cardio-Vascular System:

- (i) Physiology of the heart
- (ii) Heart sounds
- (iii) Cardiac cycle, Cardiac output.
- (iv) Auscultatory areas.
- (v) Arterial pressures, blood pressure
- (vi) Hypertension
- (vii) Electro cardiogram (ECG)

4. Respiratory system:

- (i) Respiratory movements.
- (ii) Definitions and Normal values of Lung volumes and Lung capacities.

5. Excretory system:

- (i) Normal Urinary output
- (ii) Micturation
- (iii) Renal function tests, renal disorders.

6. Reproductive system:

- (i) Formation of semen and spermatogenesis.
- (ii) Brief account of menstrual cycle.

7. Central Nervous system:

- (i) Functions of CSF.

8. Endocrine sytem:

Functions of the pituitary, thyroid, parathyroid, adrenal and pancreatic Hormones.

9. Digestive system (for the students of Diploma in Scope Support Technology)

- (i) Physiological Anatomy of the GIT.
- (ii) Food Digestion in the mouth, stomach, intestine
- (iii) Absorption of foods
- (iv) Role of bile in the digestion.

PRACTICAL

- 1) The compound Microscope
- 2) Determination of ESR-By westergren's method
- 3) Determination of Blood Groups.
- 4) Measurement of human blood pressure.
- 5) Examination of Respiratory system to count respiratory rate and measure inspiration and respiration

BIO-CHEMISTRY

Carbohydrates

Glucose and Glycogen Metabolism

Proteins:

Classification of proteins and functions

Lipids:

Classification of lipids and functions

Enzymes:

Definition – Nomenclature – Classification – Factors affecting enzyme activity – Active site – Coenzyme – Enzyme Inhibition – Units of enzyme – Isoenzymes – Enzyme pattern in diseases.

Vitamins & Minerals:

Fat soluble vitamins(A,D,E,K) – Water soluble vitamins – B-complex vitamins- principal elements(Calcium, Phosphorus, Magnesium, Sodium, Potassium, Chlorine and sulphur)- Trace elements – Calorific value of foods – Basal metabolic rate(BMR) – respiratory quotient(RQ) Specific dynamic action(SDA) – Balanced diet – Marasmus – Kwasoirkar

Acids and bases:

Definition, pH, Henderson – Hasselbalch equation, Buffers, Indicators, Normality, Molarity, Molality

BIOCHEMISTRY SYLLABUS FOR PRACTICALS

1. Benedict's test
2. Heat coagulation tests

PATHOLOGY

1. Cellular adaptation, Cell injury & cell death.
Introduction to pathology.
Overview: Cellular response to stress and noxious stimuli.
Cellular adaptations of growth and differentiation.
Overview of cell injury and cell death.
Causes of cell injury.
Mechanisms of cell injury.
Reversible and irreversible cell injury.
Examples of cell injury and necrosis
2. Inflammation.
General features of inflammation
Historical highlights
Acute inflammation
Chemical mediators of inflammation
Outcomes of acute inflammation
Morphologic patterns of acute inflammation
Summary of acute inflammation
Chronic inflammation
3. Immunity disorders.
General features of the immune system
Disorders of the immune system
4. Infectious diseases.
General principles of microbial pathogenesis
Viral infections
Bacterial infections-Rheumatic heart disease.
Fungal infections
Parasitic infections
5. Neoplasia.
Definitions
Nomenclature
Biology of tumor growth benign and malignant neoplasms
Epidemiology
Carcinogenic agents and their cellular interactions
Clinical features of tumors

6. Environmental and nutritional disorders.
Environmental and disease
Common environmental and occupational exposures
Nutrition and disease.
Coronary artery disease.

PRINCIPLES OF MANAGEMENT

(a): PRINCIPLES OF MANAGEMENT

Development of Management: Definitions of Management – Contributions of F.W. Taylor, Henry Fayol and others

Functions of Management: Planning – Organizing – Directing – Controlling

Planning: Types of planning – Short-term and long plans – Corporate or Strategic

Planning – Planning premises – Policies – Characteristics and sources – principles of policy making – Strategies as different from policies – Procedures and methods – Limitations of planning

Organizing: Importance of organization – Hierarchy – Scalar chain – Organization relationship – Line relationship – Staff relationship - Line staff relationship – Functional relationship - Committee organization – Management committees – Departmentation

Motivation: Motivation theories – McGregor's theory X and theory Y – Maslow's and Herzberg's theory – Porter and Lawler model of complex view of motivation – Other theories – Diagnostic signs of motivational problems – Motivational techniques

Communication: Types of communication – Barriers of effective communication – Techniques for improved communication

Directing: Principles relating to Direction process – Principles and theories of leadership – Leadership Styles – Delegation of authority

Controlling: Span of control – Factors limiting effective span of control – Superior management, General managers, Middle managers and supervisors – Planning and controlling relationships – Management control process – Corrective measures – Strategic control points – Budgetary control – Types of budgets

Co-ordination: Co-ordination and co-operation – Principles of co-ordination – Techniques of co-ordination charts and records – Standard procedure instructions

(b): PERSONNEL MANAGEMENT

Objective of Personnel Management – Role of Personnel Manager in an organization – Staffing and work distribution techniques – Job analysis and description – Recruitment and selection processes – Orientation and training – Coaching and counseling – disciplining – Complaints and grievances – Termination of employees – Performance appraisal – Health and safety of employees - Consumer Protection Act as applicable to health care services

(c): FINANCIAL MANAGEMENT

Definition of financial Management – Profit maximization – Return maximization – wealth maximization – Short term Financing – Intermediate Financing – Long term Financing – leasing as a source of Finance – cash and Security Management – Inventory Management – Dividend policies – Valuations of Shares – Financial Management in a hospital – Third party payments on behalf of patients. Insurance – health schemes and policies

ENGLISH

Communication:-

Role of communication

Defining Communication

Classification of communication

Purpose of communication

Major difficulties in communication

Barriers to communication

Characteristics of successful communication – The seven Cs

Communication at the work place

Human needs and communication “Mind mapping”

Information communication

Comprehension passage:-

Reading purposefully

Understanding what is read

Drawing conclusion

Finding and analysis

Explaining:-

How to explain clearly
Defining and giving reasons
Explaining differences
Explaining procedures
Giving directions

Writing business letters:-

How to construct correctly
Formal language
Address
Salutation
Body
Conclusion

Report writing:-

Reporting an accident
Reporting what happened at a session
Reporting what happened at a meeting

BASICS OF COMPUTER

COURSE CONTENT:

Introduction to computer – I/O devices – memories – RAM and ROM – Different kinds of ROM – kilobytes, MB, GB their conversions – large computer – Medium, Micro, Mini computers – Different computer languages – Number system – Binary and decimal conversions – Different operating system – MS DOS – Basic commands – MD, CD, DIR,TYPE and COPY CON commands – Networking – LAN, WAN,MAN(only basic ideas)

Typing text in MS word – Manipulating text – Formatting the text – using different font sizes, bold, italics – Bullets and numbering – Pictures, file insertion – Aligning the text and justify – choosing paper size – adjusting margins – Header and footer, inserting page No's in a document – Printing a file with options – Using spell check and grammar – Find and replace – Mail merge – inserting tables in a document.

Creating table in MS-Excel – Cell editing – Using formulas and functions – Manipulating data with excel – Using sort function to sort numbers and alphabets

– Drawing graphs and charts using data in excel – Auto formatting – Inserting data from other worksheets.

Preparing new slides using MS-POWERPOINT – Inserting slides – slide transition and animation – Using templates – Different text and font sizes – slides with sounds – Inserting clip arts, pictures, tables and graphs – Presentation using wizards.

Introduction to Internet – Using search engine – Google search – Exploring the next using Internet Explorer and Navigator – Uploading and Download of files and images – E-mail ID creation – Sending messages – Attaching files in E-mail – Introduction to “C” language – Different variables, declaration, usage – writing small programs using functions and sub – functions.

PRACTICAL

- Typing a text and aligning the text with different formats using MS-Word
- Inserting a table with proper alignment and using MS-Word
- Create mail merge document using MS-word to prepare greetings for 10 friends
- Preparing a slide show with transition, animation and sound effect using MS-Powerpoint
- Customizing the slide show and inserting pictures and tables in the slides using MS-powerpoint
- Creating a worksheet using MS-Excel with data and sue of functions
- Using MS-Excel prepare a worksheet with text, date time and data
- Preparing a chart and pie diagrams using MS-Excel
- Using Internet for searching, uploading files, downloading files creating e-mail ID
- Using C language writing programs using functions

B.Sc. Critical Care Technology

II year Syllabus

Main Syllabus

- 1. Applied Anatomy related to critical care.**
- 2. Applied physiology related to critical care.**
- 3. Clinical Pharmacology**
- 4. Clinical Microbiology and Infection control**
- 5. Airway**
- 6. Oxygen Therapy**
- 7. Xray**
- 8. Fundamentals of Electricals and electronics**
- 9. Clinical scenarios**

1. Applied Anatomy related to critical care

I RESPIRATORY SYSTEM

- Introduction
- Medical Terminology
- Anatomical terms, planes, relations
 - Anatomy *of* the upper respiratory tract
- Nose, oral cavity
- Pharynx, Larynx
 - Anatomy *of* thoracic cage bones, muscles, innervation
 - Anatomy *of* the lungs - overview
 - Pleura, lobes *of* lung, bronchi, trachea, hilum, bronchial tree
 - Alveolus, Bronchioles,
 - Blood supply,
 - Lymphatics
 - Innervation

II CARDIOVASCULAR SYSTEM

- Overview of CVS
- Anatomy of heart - Pericardium, myocardium, endocardium, valves,
- Anatomy of Vascular system - Major Vessels, Arteries, Veins, Capillaries
- Regional Circulation - coronary, cerebral, splanchnic

III CENTRAL NERVOUS SYSTEM

- Basic organisation of the nervous system - Central, Peripheral, Autonomic
- Cerebral blood flow
- Pain pathway

2. Applied physiology related to critical care

I. RESPIRATORY SYSTEM

- Physiology *of* breathing
- Homeostasis
- Mechanics *of* Breathing, Muscle action
- Regulation *of* breathing
- Lung Volumes & Capacity
- Gas exchange & transport- oxygen, carbon dioxide
 - Diffusion
 - O₂ Transport and abnormalities
 - CO₂ Transport and abnormalities
- Pressure, Volume
- Resistance, Compliance
- Ventilation and Perfusion, V/Q ratio
- Gas exchange, mechanism *of* diffusion

- Work of breathing
- Transport of O₂ and CO₂; factors affecting oxygen transport
- Acid - base balance
- Pulmonary Function Tests
- Arterial Blood Gas
- Types of respiratory failure - causes and treatment

II CARDIOVASCULAR SYSTEM

- Cardiac cycle
- Cardiac output - factors affecting cardiac output
- Cardiac conducting system
- Regulation of rate, basic arrhythmias
- Principles of ECG, Normal ECG
- Blood pressure
- maintenance of normal blood pressure and factors affecting it
- systolic, diastolic, pulse pressure, mean
- Oxygen delivery, uptake to tissues
- Central venous pressure
- Cardiac output, Stroke volume contractility
- Preload, After load
- Interpretation of common haemodynamic parameters.
- Assessment of hemodynamic parameters
- Recognise the following regarding arterial cannulation
- Indications

- Cannulation sites
- Possible complications
- Normal pressures and their significance
- Pressure wave forms
- Significance of respiratory variation in the pressure wave forms

. CVP Monitoring

- Indications
- Factors affecting measurement
- Insertion sites
- Types of catheters
- Correct technique of pressure measurement.

III CENTRAL NERVOUS SYSTEM

- Metabolic requirements of the brain
- Consciousness, Coma, Brain injury
- Sedation
- Brain Death

3. Clinical Pharmacology:

- Drugs - Nomenclature
- Modes of action of drugs
- Routes of administration
- Drug dose calculation - Dilution, infusion rate
- Medical gases: O₂ ; N₂O
- Bronchodilators
- Mucokinetic agents
- Antihistamines
- Steroids
- Drugs affecting autonomic nervous system
- Inotropic agents, Chronotropic agents,
- Vasopressors & Vasodilators
- Anti-hypertensives
- Analgesics; sedatives
- Neuromuscular blocking agents

- Antimicrobial drugs, antiviral and anti fungal agents - basic concepts
Antimicrobial Resistance - Basic concepts
- Antiseptic agents

4. Clinical Microbiology And Infection Control

INTRODUCTION - Importance of infection in an ICU

Agents causing Infection

SPREAD OF INFECTION Source; host; transmission

Biohazardous materials

INFECTION CONTROL & UNIVERSAL PRECAUTIONS

- Sterilisation & Disinfection - concepts
- Methods of sterilization
- Spread of infection
- Elimination of source - Cleaning and sterilizing equipment
- Interrupting transmission of infection - role of health care workers
- Disposal of infection wastes
- Surveillance; quality control

SPECIFIC INFECTIONS

Nosocomial Infections: Types - Prevention .

HIV-AIDS .

Hepatitis A, B, C

Tropical Infections -Tetanus, Malaria, Leptospirosis, Dengue, Rickettsial,
Amoebiasis Sepsis

5. Airway Care

INDICATIONS FOR ARTIFICIAL AIRWAYS

- Relieving airway obstruction
- Secretion removal
- Protecting the airway
- Positive Pressure Ventilation

SELECTING AND ESTABLISHING AN ARTIFICIAL AIRWAY

- Nasal airways
- Pharyngeal airways
- Tracheal airways

AIRWAY CLEARANCE TECHNIQUES

- Airway suctioning
- Bronchoscopy

AIRWAY MAINTENANCE

- Securing the airway and confirming placement
- Providing adequate humidification
- Minimizing nosocomial infections
- Providing cuff care
- Facilitating clearance of secretions
- Troubleshooting airway emergencies

EXTUBATION

- Indications
- Procedure
- Post extubation care & complications

6. Oxygen Therapy

- Sources of oxygen for therapy
- Storage of oxygen
- Oxygen delivery systems
- Hazards of oxygen
- Modes of O₂ therapy
- Monitoring O₂
 - delivery systems (in vitro)
 - blood gases in patient (in vitro.)
- Pulse oximetry
- Economic issues

7. CHEST XRAY

NORMAL CHEST X-RA Y

- Normal anatomy
- Basic physics of X-ray and assessment of film quality
- Cardiac configuration
- Lung fields and airway
- Optimum position of - ET, NG, Central Lines

ABNORMAL CXR:

- Trauma:
 - Pneumothorax
 - Hemothorax
 - Lung contusion
- Pulmonary oedema
- CCF
- ARDS
- Pneumonia: - Bronchopneumonia
 - Lobar pneumonia
 - Aspiration pneumonia

8. Fundamentals of Electricity and Electronics:

Resistance: Symbol, units, colour coding equivalent resistance with 'connection in series and parallel.

Capacitance: Symbol, units, series and parallel connection

Inductance and transformers

Parameters of electricity power - voltage, current frequency, power.

Differences between AC and DC -

AC and DC power supplies, Phase, neutral and earth - conventional colour coding

Ohms law and Kirchoff's law Electrical Circuits.

Earth and grounding - Symbol, importance in patient care.

AC and DC power supplies- Phase, neutral and earth - conventional colour coding

Classification of medical equipment

1. According to type of protection: B C F etc.
2. According to mode of protection: Class I -III.

9. Clinical Scenarios

RESPIRATORY SYSTEM

- Respiratory Failure
- Acute Respiratory Distress Syndrome
- Pneumonia, Tuberculosis
- Opportunistic infections
- Bronchial asthma
- Chronic obstructive airways disease
- Chronic bronchitis
- Emphysema
- Chronic Suppurative Lung Disease Bronchiectasis
- Lung Abscess
- Atelectasis / Collapse
- Pleural diseases: pneumothorax, pleural effusions

CARDIOVASCULAR SYSTEM

- Shock - hypovolemic, cardiogenic, obstructive, septic
- Congestive cardiac failure; Acute-left ventricle failure
- Pulmonary oedema
- Pulmonary hypertension
- Pulmonary embolism
- Ischemic heart disease; Myocardial infarction

NERVOUS SYSTEM:

- Cerebrovascular Disease
- Neurological Failure:
- Coma
- Delirium
- Neuromuscular disease
- Myasthenia gravis
- Guillain Barre Syndrome
- Cerebrovascular disease, stroke
- Brain Death
- Persistent Vegetative State
- Trauma
- Head injury
- Unstable spine & protection

GASTROINTESTINAL, HEPATIC, PANCREAS:

- Upper GI Bleed
- Hepatic Coma
- Pancreatitis

RENAL:

Renal Failure in ICU

ENDOCRINE & METABOLIC:

- Hypoglycemia
- Hyperglycemia

HAEMATOIOLOGY:

- Haematological Malignancies
- Neutropenia
- Coagulopathy
-

MISCELLANEOUS:

- Envenomation - snake bite, scorpion sting
- Poisoning - general supportive care, common poisons

B.Sc. Critical Care Technology

III year - syllabus

Main Syallabus

- 1. Arterial Blood Gases**
- 2. Mechanical Ventilation – Non invasive and invasive**
- 3. Care of the patient on Ventilator**
- 4. Care of the Chest tube**
- 5. Cardiovascular support**
- 6. Respiratory support**
- 7. Recognition of Cardiorespiratory Arrest**
- 8. Basic Life Support**
- 9. Advanced Life support**
- 10. Care of unconscious patient**
- 11. Basic Administration**
- 12. CSSD procedures**
- 13. Equipment maintanance and troubleshooting**
- 14. Medical Ethics**
- 15. Procedural skills.**
- 16. Traum, Burns, Perioperative Care**

1. ARTERIAL BLOOD GASES

- Procedure, puncture sites
- Sampling techniques
- Using an ABG machine,
- Different types of ABG machines - advantages and disadvantages, cost considerations
- Transportation of sample
- Interpretation of values
- Appropriate Interventions

2. MECHANICAL VENTILATION - NON INVASIVE AND INVASIVE

- Basic concepts: - Mechanics of ventilation
 - Work of breathing
 - Indications
 - Humidification of gas
 - Ventilator settings
 - Timings -Inspiratory, Expiratory, Inspiratory hold
 - Flow
 - Tidal volume
 - Pressure - Peak
 - plateau
 - PEEP
 - "POP-OFF"
 - Pressure support
 - Proximal airway vs distal
 - FiO₂
 - Modes of ventilation
- Non Invasive, CPAP, BiPAP
- Invasive modes - Controlled, Assisted, SIMV, APRV, Pressure Support
- Alarm settings
 - Care of ventilator & tubings- -Sterility
 - Weaning - concepts

- Humidifier - types
- advantages and disadvantages
- Inhaled drug therapy
- nebulisation - different types, advantages & disadvantages
- MDI with Spacer

3. CARE OF PATIENTS ON VENTILATOR

- Ensuring proper placement of tube
- Cuff pressure ,
- Tracheobronchial hygiene, suctioning
- Humidification, Chest physio
- Ventilator settings
- Monitoring ventilatory parameters

4. CARE OF CHEST TUBE

Drainage systems of pleural air, fluid

5. CARDIOVASCULAR SUPPORT:

- A. Assisting in
 1. Arterial and central venous cannulation
 2. Peripheral venous cannulation
 3. PiCCO I Pulmonary artery catheter insertion - measuring cardiac output by thermomodulation
 4. Pericardiocentesis
 5. Transvenous pacemaker
- B. Placement of ECG leads taking 12-lead dynamic ECG.
- C. Use of infusion devices for vasoactive medications.
- D. Assisting in electrical cardioversion and defibrillation. Placement of transcutaneous pacemaker.
- E. Setting up invasive pressure monitoring - levelling, calibration, zeroing; measuring pressures

- **MONITORING CARDIOVASCULAR SUPPORT:**

Zeroing, calibration and trouble- shooting of pressure transducers.

Troubleshooting invasive blood pressure monitoring and central venous pressure monitoring' Setting up and trouble shooting invasive cardiacoutput monitoring - PiCCO, PA catheter

- **INVASIVE PRESSURE MONITORING**

- arterial & venous
- care & maintenance
- transducers, dome, zeroing, calibration

- **BASICS OF FLUID RESUSCITATION & INOTROPIC SUPPORT**

6. RESPIRATORY SUPPORT:

1. Maintaining an open airway.

2. Assisting in

- Tracheal intubation (oral, nasal)
- Cricothyrotomy, tracheostomy, trans tracheal catheters
- Mechanical ventilatory support
 - Monitoring airway pressures
- Topical use of respiratory medication (inhalers and nebulisers)
- Suctioning: Chest physiotherapy and incentive spirometry.
- Weaning techniques.
- Assisting in fibroptic bronchoscopy.
- Oxygen therapy devices and their limitations
- Assisting in chest tube insertion and chest drainage systems
- Bed side pulmonary function tests
- Arterial blood gas sampling; Using the ABG machine
- CPAP & BI PAP circuit

RESPIRATORY THERAPY:

Setting up & Troubleshooting:

Oxygen administration

Non invasive Ventilation - NIV on standard ventilator, BiPAP, CPAP

Invasive Ventilation

Setting up the ventilator

Oxygenation

Ventilation

Alarms

Trigger

Evaluate and trouble shoot the patient- ventilator system

Interpret ventilator graphic waveform

Detect and measure auto-peep

Monitoring of patients who are assisted by mechanical ventilation and are in sudden distress

MONITORING RESPIRATORY SUPPORT

Monitoring of patients who are assisted by mechanical ventilation and are in sudden distress

Recognise the methods and significance of measuring the following lung volumes and flows in the ICU.

- a. Tidal volume
- b. Vital capacity
- c. Peak Flow Rate
- d. Negative Inspiratory Pressure
- e. Respiratory Graphics Analysis

7. RECOGNITION OF CARDIORESPIRATORY ARREST

8. BASIC LIFE SUPPORT (Hands on Training)

- Ventilation, Use of Ambu bag
- Cardiac massage

9. CONCEPTS IN ADVANCED LIFE SUPPORT

- Drugs
- Defibrillator

PROLONGED LIFE SUPPORT

- Concept of the "ICU" and team work

10. CARE OF THE UNCONSCIOUS PATIENT

- Comfort, orientation, pain control
- Skin integrity assessment and care
- Physiotherapy - Chest & Limbs
- Nutritional needs and supply
- Basic care of surgical wounds and fractures
- Psychological assessment and support in an ICU.

11. BASIC ADMINISTRATION:

Economic Issues

Raising purchase orders for equipment

Maintaining consumables stock

Maintaining equipment - repair and troubleshooting

12. CSSD PROCEDURES

1. Waste disposal collection of used items from user area, reception protective clothing and disinfections sage gaurds,
2. use of disinfectionts sorting and classification of equipment for cleaning purposes, sharps, blunt lighted etc. contaminated high risk baby care - delicate instruments or hot care instruments,
3. 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 tubings, cleaning glass ware, cleaning syringes and needles.
4. Materials used for wrapping and packing assembling pack contents. Types of packs prepared. Inclusion of trays ahd galliparts 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.
5. General observations principles of sterlization. Moist heat sterlization. Dry heat sterlization. EO0gas sterlization. H202 gas plasma vapo sterlization.

13. EQUIPMENT MAINTENANCE & BASIC TROUBLESHOOTING:

Ventilators, CPAP, BiPAP machines
Pumps - Infusion, Syringe
Monitors - Stand alone & multiparameter
ECG Machine
ABG Machine
Defibrillator

14. MEDICAL ETHICS

1. Medical ethics - Definition - Goal - Scope
2. Code of conduct - Introduction –
3. Basic principles of medical ethics – Confidentiality
4. Malpractice and negligence - Rational and irrational drug therapy
5. Autonomy and informed consent - Right of patients
6. Care of the terminally ill- Euthanasia
8. Organ transplantation
9. Medico legal aspects of medical records - Medicolegal case and type- Records and document related to MLC - ownership of medical records - Confidentiality Privilege communication - Release of medical information - Unauthorized disclosure - retention of medical records - other various aspects

15.PROCEDURAL SKILLS

EMERGENCY LIFE SUPPORT:

Basic Life Support - Keeping Airway open, Use of Ambu bag and mask ventilation,
Cardiac massage

Advanced Life Support

Use of Defibrillator

Emergency Management of Trauma

GASTROINTESTINAL; GENITOURINARY AND OBSTETRIC AND GYNAECOLOGICAL PROBLEMS:

1. Assisting in

a. Placement of trans oesophageal devices.

NG tubes, enteral feeding tubes, Sengstaken-Blackemore tube

b. Maintenance of urinary catheters

c. Placement of hemodialysis catheters

d. Management peritoneal dialysis

e. Management CVVHD

NERVOUS SYSTEM:

Assisting in:

Lumbar puncture

Application of intracranial pressure monitoring device

Application of on-line immobilisation (C spine protection)

Cervical neck collar.

TOXICOLOGY:

Gastric lavage

ANALGESIA and SEDATION

Care of Epidural

Patient Controlled Analgesia

HAEMATOLOGICAL DISORDERS:

Assisting in:

Exchange Transfusion

Plasmapheresis

16. TRAUMA, BURNS, ENVIRONMENTAL INJURIES, PERIOPERATIVE CARE:

BOOKS RECOMMENDED

TEXT BOOKS

1. Egan's Fundamentals of Respiratory Care – Robert L. Wikins, James K Stoller, Craig L Scalan (Mosby)
2. The ICU Book – Paul L Marino (Lippincott, Williams & Wilkins)
3. Practical Methods for Respiratory Care – Raymond Sibberson (Mosby)
4. Respiratory Physiology – The Essentials L John B West (Williams & Wilkins)
5. Ventilation / Blood Flow & Gas Exchange – John B West (Blackwell Scientific Publications)
6. Techniques in Bedside Haemodynamic Monitoring – Elaine Kiess Daily & John Speer Schroeder (Mosby)
7. All you really need to know to interpret arterial blood gases – Lawrence Martin (Lea & Febiger)
8. Text book of Advanced Cardiac Life Support . American Heart Association
9. Mechanical Ventilation – Susan P Pilbeam & J M Cairo (Elsevier)

Pocket Manuals

10. Critical Care Secrets: Parsons, Wiener-Kronish, Jaypee Brothers
11. Washington Manual of Critical Care
12. Medical Ethics

ALLIED HEALTH SCIENCES
EXAMINATION QUESTION PAPER PATTERN
B.Sc. DEGREE COURSES

Essay	3 x 10 = 30 Marks
Short Notes	8 x 5 = 40 Marks
Short Answers	10 x 3 = 30 Marks
Total	100 Marks

B.Sc. ALLIED HEALTH SCIENCES
EXAMINATION PATTERN – I YEAR COMMON FOR THE
FOLLOWING COURSES

1. B.Sc. in Accident and Emergency Care Technology
2. B.Sc. in Operation Theatre and Anaesthesia Technology
3. B.Sc. in Critical Care Technology
4. B.Sc. in Cardiac Care Technology
5. B.Sc. in Dialysis Technology

Subjects	Internal Assessment (IA)		Theory		Practical	
	Max	Min	Max	Min	Max	Min
1. Applied Basic Sciences	50	25	100	50	50	25
2. Computer and English	50	25	100	50	50	25

B.Sc. ALLIED HEALTH SCIENCES

EXAMINATION PATTERN – II YEAR

B.Sc. Degree in Critical Care Technology

Subjects	Internal Assessment (IA)		Theory		Practical	
	Max	Min	Max	Min	Max	Min
1. Applied Anatomy & Physiology	50	25	100	50	--	--
2. Clinical Microbiology	50	25	100	50	50	25
3. ICU Monitoring - I	50	25	100	50	50	25

B.Sc. ALLIED HEALTH SCIENCES

EXAMINATION PATTERN – III YEAR

B.Sc. Degree in Critical Care Technology

Subjects	Internal Assessment (IA)		Theory		Practical	
	Max	Min	Max	Min	Max	Min
1. ICU Monitoring – II	50	25	100	50	50	25
2. ICU Equipments	50	25	100	50	50	25
3. Medical Ethics	50	25	100	50	--	--
