

पाटन स्वास्थ्य विज्ञान प्रतिष्ठान सेवा आयोग
प्राज्ञिक सेवा, इन्टर्नल मेडिसिन समूह, **Respiratory and Critical Care** उपसमूह, सहायकप्राध्यापक पद, (नौ
ख) (९ख) तहको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

Paper II: Technical Subject

Section (A) (internal medicine) - 45 Marks

1. Anatomy

1.1 Neuro-Anatomy

- 1.1.1 Neuron and its structure
- 1.1.2 Supportive cell type structure, cellular and myelin sheaths
- 1.1.3 Synapsis, neuro-effective junctions and receptors
- 1.1.4 Cerebrum: morphology, cerebral cortex, cortical neurons, cortical layers
- 1.1.5 Motorsystem: structure, corticospinal, rubrospinal, vestibulospinal and reticulospinal tracts
- 1.1.6 Basalganglia: structure
- 1.1.7 Cerebellum: morphology, cellular structure and organization
- 1.1.8 Brainstem: general organization
- 1.1.9 Spinal cord and ganglia: morphology, motor and sensory organization in the spinal cord

1.2 Anatomy of neuro-muscular system

- 1.2.1 LMN, structuring of voluntary muscles, motor units, types of muscle fibres
- 1.2.2 Muscle spindles and other muscles & tendon receptors
- 1.2.3 Sensory system
- 1.2.4 Reflex pathways: involving cranial nerves, and limb and trunk
- 1.2.5 Cranial nerves and special senses: pathways and structure of special sense organs
- 1.2.6 Anatomy of ventricular system and CSF production
- 1.2.7 Anatomy of meninges
- 1.2.8 Autonomic nervous system
- 1.2.9 Arterial and venous cerebral circulation
- 1.2.10 Blood brain barrier

1.3 Cardiovascular system

- 1.3.1 Gross anatomy of the heart and circulatory system
- 1.3.2 Histology of the cardiac muscles
- 1.3.3 Embryology of the heart and circulation
- 1.3.4 Coronary and pulmonary circulation

1.4 Gastrointestinal tract

- 1.4.1 Gross anatomy of the gastrointestinal tract at different levels
- 1.4.2 Gross anatomy of the hepatobiliary system and pancreas
- 1.4.3 Histological aspects of GI tract at different levels
- 1.4.4 Blood supply and development aspects of GI tract and hepatobiliary system

1.5 Kidney and urinary tract

- 1.5.1 Gross anatomy of the kidney and urinary tract
- 1.5.2 Structure of nephron and function at different level
- 1.5.3 Development of kidney and urinary tract
- 1.5.4 Renal circulation

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1.6 Endocrinal organs

1.6.1 Gross anatomy of different endocrinal organs and their development

1.6.2 Histology of different endocrinal organs

2. Physiology

2.1 Homeostatic behaviors of different fluid compartment in the body and implications during common clinical situations of burn, blood loss, diarrhea, vomiting, etc.

2.2 Role of pH in normal and in abnormal conditions e.g., diarrhea, vomiting, airway obstruction, medication, etc

2.3 Functions of micro/macro molecular, organelles and other structures of the cell

2.4 Nutritional requirements of normal people (different ages, male, female) and ill patients of all categories with their modality of supplement

2.5 Mechanisms of metabolic response to trauma and infection

2.6 Function of hemopoietic /R.E.system

2.7 Blood groups, methods of transfusion of blood & blood products & their hazards

2.8 Mechanism of haemostasis, fibrinolysis & methods to control haemorrhage

2.9 Types of excitable tissues and methods of recording their activity e.g., EMG, EEG, ECG, etc

2.10 Cellular communication, chemical/neuronal/ electrical/synaptic transmission

2.11 Autonomic nervous system

2.12 Neuro transmitters, their synthesis and metabolism

2.13 Drugs affecting neurotransmitter activity

2.14 Cardiac and smooth muscles

2.15 Calcium metabolism

2.16 Pain and the mechanism of pain

2.17 Physiology of consciousness and sleep mechanism

2.18 Effect of injury to neurons

2.19 Different methods of monitoring of the heart functions

2.20 Drugs used for inotropic & chronotropic effects

2.21 Mechanism of blood pressure regulation

2.22 Physiology of circulation of different organ in the body

2.23 Pathophysiology of shock and principle of their management

2.24 Capillary exchange

2.25 Assess vascular functions

2.26 Respiration & cause of breathlessness

2.27 Measure blood flow

2.28 Measure/ assess blood gas

2.29 Mechanism of respiratory control

2.30 Mechanism of transport

2.31 Use of oxygen as therapy

2.32 Mechanism of absorption from gut and physiology of gastrointestinal motility

2.33 Composition of GI and hepatobiliary secretions and methods for their assessment

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- 2.34 Normal functions of the liver
- 2.35 Formation of urine
- 2.36 Mechanism of osmoregulation
- 2.37 Normal thermoregulation
- 2.38 Mechanism of hormone synthesis, secretion, metabolism

3. Pathology

- 3.1 Concept of cell injury, different types of degeneration & trauma
- 3.2 Principles of inflammation and the results of various types of inflammation
- 3.3 Acute and chronic inflammation
- 3.4 Tissue regeneration, wound healing and healing process
- 3.5 Various types of disorder of growth
- 3.6 Principles of neoplasia
- 3.7 Benign and malignant tumor
- 3.8 Mechanism of thrombosis, and embolism and their effects
- 3.9 Ischemia & infarction
- 3.10 Mechanism of blood clotting and different types of bleeding disorders
- 3.11 Principle of blood grouping system & complications of blood transfusion
- 3.12 Principle of shock
- 3.13 Principle of genetics and apply its concept in hereditary diseases
- 3.14 Principle of immune response
- 3.15 Humoral and cell mediated immunity
- 3.16 Principle of organ transplantation and causes of its rejection
- 3.17 Principle of Host Parasite relationship
- 3.18 Different types of micro-organism (Bacteria, Fungus, Parasite, and Virus)
- 3.19 Pathogenic and non-pathogenic micro-organisms
- 3.20 Principle of asepsis & antisepsis, sterilization and disinfection
- 3.21 Principle of antibiotic and chemotherapy
- 3.22 Microbes that cause wound infection
- 3.23 Principle of Hospital infection (Nosocomial infection)

4. Clinical Pharmacology

4.1 General clinical pharmacology

- 4.1.1 Pharmacokinetics, pharmacodynamics, adverse drug reactions, drug interactions, drug use in childhood, pregnancy, lactation, and old age
- 4.1.2 Clinical trials
- 4.1.3 Rational drug use

4.2 Neurosensory and musculoskeletal systems

- 4.2.1 Parasympathomimetics and parasympatholytics, adrenergic and antiadrenergic drugs, narcotic and non-narcotic analgesics, non-steroidal anti-inflammatory drugs, alcohol, sedative/hypnotics, anti-parkinsonism drugs, anesthetics (general and local), appetite suppressants

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4.2.2 Drugs for psychiatric disorder, gout and rheumatoid arthritis, vertigo, and eye, ENT, and skin diseases

4.3 Cardiovascular system

4.3.1 Drugs for the treatment of heart failure, cardiac arrhythmias, angina pectoris, hypertension, shock, thromboembolic disorders, myocardial infarction, anemia

4.3.2 Hemostatics, anti-coagulants, and lipid-lowering drugs

4.4 Gastrointestinal system

4.4.1 Drugs for peptic ulcer, diarrhoea, constipation

4.4.2 Antispasmodics, antiemetics

4.5 Reproductive/Endocrine systems

4.5.1 Anti-diabetics, thyroid and anti-thyroid drugs, corticosteroids, sex hormones and antagonists, hypothalamic and pituitary hormones

4.5.2 Drugs used in labor and puerperium

4.6 Renal/Electrolyte system

4.6.1 Drugs for edema, and fluid/electrolyte and acid/base disturbances

4.7 Infections

4.7.1 General principle of chemotherapy

4.7.2 Antibacterial, antiprotozoal, anthelmintic, antifungal, and antiviral drugs

4.8 Miscellaneous drugs

4.8.1 Drugs for malignant diseases and immunosuppression

4.8.2 Vaccines

4.8.3 Vitamins and minerals

4.8.4 Antidotes

5. Recent Advances in Internal Medicine and Emergencies

5.1 Recent advances in all disciplines of Internal Medicine

5.2 Cardiovascular emergencies: Cardiac arrest, Acute MI, Cardiogenic shock, Cardiacarrhythmias, Pulmonary edema, Hypertensive crisis, Acute cardiac tamponade, DVT & pulmonary embolism

5.3 Gastrointestinal emergencies: G.I. bleeding, Acute gastroenteritis and food poisoning, Acute pancreatitis, Hepatic failure, Acute abdomen

5.4 Neurological emergencies: CVA including SAH, Hypertensive encephalopathy, Meningitis, Encephalitis, Unconscious patient, Status epilepticus, Myastheniagravis

5.5 Endocrine and metabolic emergencies: DKA and coma, Hypoglycemia, Hyperosmolar non ketotic diabetic coma, Thyroid crisis, Myxoedema coma, Pheochromocytoma, Acuteadrenocorticalcrisis, Hypopituitarism

5.6 Hematological emergencies: Aplastic anaemia, Agranulocytosis, Acutethromocythpenicpurpur, Leukemia, Hemophiliaandallieddisorders

5.7 Renal emergencies: Renalcolic, Renalfailure, Hematuria

5.8 Miscellaneous emergencies:

5.8.1 Emergencies in fluid and electrolyte balance

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- 5.8.2 Acute emergencies in infectious and tropical disease
- 5.8.3 Malaria
- 5.8.4 Septicemia
- 5.8.5 Tetanus
- 5.8.6 Snakebite
- 5.8.7 Dog bite & rabies
- 5.8.8 Poisonings
- 5.8.9 Drowning
- 5.8.10 Electrocution
- 5.8.11 High altitude sickness

6. Principles and Practice of Internal Medicine

6.1 Gastroenterology

- 6.1.1 Acid peptic diseases
- 6.1.2 Gastrointestinal bleeding: upper (nonvariceal/variceal) and lower
- 6.1.3 Gastroesophageal reflux disease (GERD)
- 6.1.4 Dysphagia in relation to malignancy and achalasia
- 6.1.5 Malabsorption syndrome
- 6.1.6 IBD: ulcerative colitis and Crohn's disease
- 6.1.7 Diverticular diseases
- 6.1.8 Irritable bowel syndrome
- 6.1.9 Acute abdomen
- 6.1.10 Ascites
- 6.1.11 Liver disorders
- 6.1.12 Hepatitis: acute and chronic
- 6.1.13 Cirrhosis with special reference
- 6.1.14 Hepatic cellular cancer
- 6.1.15 Jaundice: obstructive and non-obstructive
- 6.1.16 Liver failure: acute and chronic
- 6.1.17 Pancreas
- 6.1.18 Acute, recurrent & chronic pancreatitis
- 6.1.19 Pancreatic tumor (exocrine & endocrine)
- 6.1.20 Cystic fibrosis & other childhood disorder of the pancreas
- 6.1.21 Hereditary pancreatitis
- 6.1.22 Pancreatic transplantation

6.2 Hematology

- 6.2.1 Physiology and pathophysiology of blood cell formation and haemostasis
- 6.2.2 Pathophysiology, causes and management of:
 - 6.2.2.1 Anaemia: iron deficiency (with iron metabolism), megaloblastic, haemolytic anaemia and aplastic anaemia
 - 6.2.2.2 Haemoglobinopathy and Polycythemia
 - 6.2.2.3 Leukaemia: myeloid (acute and chronic) and lymphoid (acute and chronic)
 - 6.2.2.4 Myeloproliferative diseases

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- 6.2.2.5 PV(Polycythemia Vera)
 - 6.2.2.6 Myelofibrosis
 - 6.2.2.7 Essential thrombocytosis
 - 6.2.2.8 Bleeding Disorders
 - 6.2.2.9 Plateletes Disorders
 - 6.2.2.10 Lymphomas: Hodgkin's and NonHodgkin's
 - 6.2.3 Explain the underlying principles and complications of:
 - 6.2.3.1 Blood Transfusion, Blood group and Rh factor, Principles of cross match, Hazards of transfusion, Blood-platelets component, Bone Marrow Transplantation
 - 6.2.3.2 Infectious and Tropical diseases
 - 6.2.4 Understanding of the following procedures:
 - 6.2.4.1 Peripheral blood smear
 - 6.2.4.2 Splenic aspiration
 - 6.2.4.3 Z- N staining
 - 6.2.4.4 Gram's staining
 - 6.2.4.5 Bone marrow examination
 - 6.2.4.6 Stool examination
 - 6.2.4.7 Aldehyde test
 - 6.2.4.8 Liver biopsy
 - 6.2.5 Microbiological aspects of various infectious disease
 - 6.2.6 Underlying pathogenesis of various infectious/tropical disorders
 - 6.2.7 Basic pharmacokinetics of drugs used for treatment of tropical and infectious diseases
 - 6.2.8 Diagnose and manage following emergencies:
 - 6.2.8.1 Septicemia, septic shock
 - 6.2.8.2 Cerebral malaria/black water fever
 - 6.2.8.3 Tetanus/gas gangrene
 - 6.2.8.4 Acute viral encephalitis
 - 6.2.8.5 Hepatic Encephalopathy
 - 6.2.8.6 Enteric Encephalopathy
 - 6.2.8.7 HIV&AIDS
 - 6.3 **Rheumatology**
 - 6.3.1 Common clinical presentations of rheumatic disease
 - 6.3.2 Systemic perspective of rheumatic diseases in different systems
 - 6.3.3 Genetics and rheumatic diseases
 - 6.3.4 Inflammatory arthritides (RA, SpA, crystal arthritis and others)
 - 6.3.5 Infection and joints (Septic arthritis and others)
 - 6.3.6 Connective tissue diseases (SLE, systemic sclerosis and others)
 - 6.3.7 Vasculitides
 - 6.3.8 Diseases of bones and cartilages (osteoarthritis, osteoporosis and others)
 - 6.3.9 Regional musculoskeletal pain syndromes
 - 6.3.10 Miscellaneous conditions (autoinflammatory diseases, sarcoidosis & others)
 - 6.3.11 Bone marrow aspiration

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- 6.3.12 Bone marrow biopsy
- 6.3.13 Z-N staining
- 6.3.14 Muscle biopsy
- 6.3.15 Skin biopsy
- 6.3.16 Arthrocentesis
- 6.3.17 Intra-articular injections
- 6.3.18 Anatomical and physiological aspects of joints muscle and blood vessels in relation to rheumatologic conditions
- 6.3.19 Basis of cellular and humoral immune response, autoimmunity and genetic therapy in rheumatological disorders
- 6.3.20 Interpret the results of various tests such as LE cell, ANF, anti-DNA, electrophoresis, complement system
- 6.3.21 Analysis of synovial fluid
- 6.3.22 Interpret the X-ray findings of bones and joints
- 6.3.23 Interpretation of the results of:
 - 6.3.23.1 Muscle biopsy
 - 6.3.23.2 Skin biopsy
 - 6.3.23.3 Kidney biopsy
- 6.3.24 To diagnose and manage rheumatologic emergencies
- 6.4 **Endocrinology and metabolic diseases**
 - 6.4.1 Understanding of the following procedures:
 - 6.4.1.1 Arterial puncture for blood gas analysis
 - 6.4.1.2 Use of glucometer and stripes for blood sugar
 - 6.4.1.3 Urine examination for sugar, Ketones, Specific gravity
 - 6.4.2 Interpret the findings of the following procedures/tests:
 - 6.4.2.1 Arterial blood gas analysis
 - 6.4.2.2 Pulse oximetry
 - 6.4.2.3 Thyroid function tests
 - 6.4.2.4 Pituitary function tests
 - 6.4.2.5 Parathyroid function tests
 - 6.4.2.6 Adrenal gland function tests
 - 6.4.2.7 G.T.T
 - 6.4.2.8 Sex hormone analysis
 - 6.4.2.9 Plain X-ray of various parts concerned
 - 6.4.3 Interpret the finding of:
 - 6.4.3.1 FNAC report of thyroid gland
 - 6.4.3.2 CT scan reports of various endocrine organs
 - 6.4.4 Diagnose and manage following emergencies:
 - 6.4.4.1 D.K.A. and coma and hyperosmolar nonketotic coma
 - 6.4.4.2 Hypoglycaemia
 - 6.4.4.3 Thyroid crisis
 - 6.4.4.4 Myxoedema coma
 - 6.4.4.5 Pheochromocytoma
 - 6.4.4.6 Hypopituitarism
 - 6.4.4.7 Hypocalcaemia

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6.4.4.8 Acuteadrenocorticalcrisis

6.4.4.9 Hypopituitarism

6.4.5 Explain the structural and functionalbasis:

6.4.5.1 Various endocrine glands, homeostatic control mechanism of hormone regulation, and the genetic basis of various endocrine disorders

7. Cardiology

7.1 Diagnose order and interpret appropriate investigations and manage the following clinical conditions:

7.1.1 Acute Rheumatic Fever

7.1.2 Valvular heart disease: rheumatic and non-rheumatic

7.1.3 Common congenital heart diseases

7.1.4 Hypertension and hypertensive heart disease

7.1.5 Ischaemic heart disease:

7.1.5.1 Stable and unstable angina

7.1.5.2 Acute myocardial infraction

7.1.6 Cardiomyopathies: dilatedcardiomyopathy, hypertrophic cardiomyopathy, restrictive cardiomyopathy

7.1.7 Pericardial diseases: pericarditis, pericardial effusion and constrictive pericarditis

7.1.8 Diseases of great arteries: coarctation of aorta, aortitis,aneurysm

7.1.9 Deepveinthrombosis: thromboembolism &pulmonaryembolism

7.1.10 Arrhythmias

7.1.10.1 Bradyarrhythmia (SA, AVblocks)

7.1.10.2 Tachyarrhythmias (SVT, VT, VF, WPW, AF, AVF)

7.1.10.3 Infective Endocarditis

7.2 Interpret the investigative of following procedures:

7.2.1 ECG with various arrhythmias

7.2.2 Stress electrocardiomyopathy

7.2.3 Echocardiogram of common acquired and congenital heart disease

7.2.4 Cardiac enzymes, pericardial fluid analysis

7.3 Diagnose and manage

7.3.1 Pulmonary oedema and cardiogenic shock

7.3.2 Dyslipidaemias

7.3.3 Corpulmonale and pulmonaryarterioal hypertension

7.3.4 Electrolyte imbalance

7.3.5 Basic science applied to cardiology

7.3.6 Fetal circulation

7.3.7 Coronary circulation

7.3.8 Pulmonary circulation

7.3.9 Embryogenesis of congenital heart diseases

7.3.10 Valvularapparatus

7.3.11 Conduction system

7.3.12 Pharmacology of cardiac drugs

7.3.13 Exercisephysiology

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7.3.14 Etiopathogenesis and pathophysiology of various cardiac diseases in relation to clotting system, lipid abnormalities, infectious diseases

7.3.15 Hemodynamics (exercise, high altitude, metabolic and hormonal disorders, fetal circulation)

8. Nephrology

8.1 Diagnose, investigate and treatment of following renal emergencies:

8.1.1 Acute renal failure

8.1.2 Renal colic

8.1.3 Haematuria

8.1.4 Fluid, electrolyte and acid-basic imbalance

8.2 Diagnose, investigate and treatment of following common renal diseases:

8.2.1 Acute glomerulonephritis

8.2.2 Nephrotic syndrome

8.2.3 Urinary tract infection

8.2.4 Chronic renal failure

8.2.5 Adult polycystic kidney disease, Alports syndrome

8.2.6 Diabetic Nephropathy

8.2.7 Renal tubular acidosis (RTA)

8.2.8 Interstitial Nephropathy

8.2.9 Toxic Nephropathy

8.2.10 Lupus Nephritis

8.2.11 Nephrocalcinosis and Nephrolithiasis

8.2.12 Renal arterystenosis (RAS)

8.3 Interpret investigations of:

8.3.1 Renal function test(RFT)

8.3.2 Blood gas analysis

8.3.3 Renal biopsy report

8.4 Basic principles of haemodialysis and peritoneal dialysis and their specific indications

9. Neurology

9.1 Perform following procedures independently:

9.1.1 Lumbar puncture

9.1.2 Intrathecal injection

9.1.3 Administration of IV contrastagent

9.2 Understanding of the following procedures

9.2.1 EEG, EMG, Nerve conduction studies

9.3 Interpretation of the findings of:

9.3.1 CT scan / MRI scan of:

9.3.1.1 Subdural haematoma

9.3.1.2 Intracranial haemorrhage including subarachnoid haemorrhage

9.3.1.3 Infarction

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9.3.1.4 Obstructive hydrocephalus

9.3.2 Myelogram:

9.3.2.1 Complete obstruction

9.3.2.2 Intramedullary compression

9.3.2.3 Extramedullary compression

9.3.3 Interpretation of the results of:

9.3.3.1 Muscle biopsy

9.3.3.2 Nerve biopsy

9.3.3.3 EEG

9.3.3.4 EMG

9.3.3.5 Nerve conduction study

9.3.3.6 Carotid and vertebral angiogram

9.3.3.7 CT myelography

9.4 Diagnose and management the following neurological emergency:

9.4.1 CVA including subarachnoid haemorrhage

9.4.2 Meningitis

9.4.3 Encephalitis

9.4.4 Unconscious patient

9.4.5 Status epilepticus

9.4.6 Myastheniagravis

9.4.7 Increased Intracranial pressure

9.4.8 Guillain-Barre syndrome

9.4.9 Hypoxicencephalopathy

10. **Oncology**

10.1 Etiopathogenesis of cancer

10.2 Epidemiology of cancer

10.3 Cancer prevention & screening

10.4 Diagnosis & diagnostic tools in cancer

10.5 Principles of cancer management

10.6 Common cancers: Oesophagus, stomach, colorectum, hepatocellular cancer, cancers of the biliary tree, pancreas, breast, lung, renal cell carcinoma, prostate, testicular, GIST, ovarian, endometrial, hematological & lymphoid malignancies, cancers of the endocrine system, HIV-associated cancers, tumors of the mediastinum etc

10.7 Oncological emergencies & paraneoplastic syndromes

10.8 Anticancer therapeutics

11. **Dermatology**

11.1 Scabies

11.2 Superficial mycoses

11.3 Superficial bacterial infections

11.4 Diagnosis and management of drug induced cutaneous eruptions

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12. Psychiatry

- 12.1 Diagnose anxiety neurosis, depression and schizophrenia
- 12.2 Differentiate between functional and organic psychoses (simple and uncomplicated)
- 12.3 Treat cases of anxiety neurosis and depression
- 12.4 Diagnose and manage substance abuse

Section (B) Respiratory and Critical Care - 55 Marks

1.1 Pulmonary Medicine

- Pneumonias (caused by various organisms, community and health care associated and in immunocompromised hosts);
- Lung abscess;
- Tuberculosis;
- Fungal infections;
- Bronchial asthma, principles of allergy and immunotherapy
- Chronic obstructive pulmonary diseases and cor-pulmonale;
- Bronchiectasis, cystic fibrosis;
- Pulmonary eosinophilia;
- Pulmonary oedema (cardiogenic and non-cardiogenic including ARDS);
- Interstitial lung disease (including idiopathic interstitial pneumonias, diffuse granulomatous lung diseases, hypersensitivity pneumonitis, drug induced lung diseases, connective tissue related lung diseases, cystic lung diseases, and pneumoconiosis);
- Carcinoma lung and other neoplasm's of the airways, pleura or mediastinum;
- Mediastinal disorders;
- Pleural diseases (e.g. dry pleurisy, pleural effusion, empyema);
- Pneumothorax;
- Sleep apnoea syndrome;
- Congenital pulmonary disorders
- Pulmonary vascular disorders including vasculitis
- Occupational and environmental lung disorders including high altitude sickness
- Surgical aspects of pulmonary disorders
- Acute and chronic Pulmonary failure
 - emergencies e.g. haemoptysis, pneumothorax, status asthmaticus and acute and chronic respiratory failure, ARDS, pulmonary embolism

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- emergency intubation and be familiar with ventilator management and its parameters.
- understanding of various inhaler devices, nebulisers and oxygen therapy.
- interpretation of X-ray chest, including its different views and of USG, CT scan, MRI pulmonary function tests including peak expiratory flow meter and spirometer and volume time curve mainly VC, FVC, FEV1 and FEV 1% and flow volume curve and diffusion capacity.
- arterial blood gas analysis and pulse oximetry reports.
- pleural aspiration, pleural biopsy, pleurodesis, and intercostal tube drainage.
- demonstrate familiarity with bronchoscope examination and findings.

1.2 Critical Care Medicine

- Preventive practices in ICU
- Basic and Advanced airway management including difficult airway management principles
- Oximetry and end-tidal Capnography
- Hemodynamic monitoring & vascular access
- Disorders of circulatory flow
- Cardiac emergencies
- Transfusion practices
- Acute respiratory failure
- Acid-base disorders
- Renal & electrolytes disorders
- Mechanical ventilation & liberation
- The abdomen and pelvis
- Disorders of nervous system
- Nutrition & metabolism
- Critical care drug therapy
- Toxicologic emergencies
- Critical care ultrasound

1.3 Anatomy

- Bronchus
- Lung

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- Pleura
- Mediastinum
- Chest wall
- Diaphragm
- Bronchial artery circulation
- Pulmonary artery circulation
- Cardiovascular system
- Related nervous system
- Related abdominal system
- Other related systems

1.4 Lung Physiology

- Mechanics of ventilation
- Gas Exchange in the lung
- Acid-Base Balance and Control of Ventilation
- Pulmonary Circulation
- Respiratory Muscle Function Testing
- Pulmonary Function Testing
- Cardiac pulmonary exercise testing
- Bronchoprovocation

1.5 Diagnostic and Therapeutic Procedures

- Diagnostic and therapeutic procedures, including bronchoscopy, thoracoscopy, ultrasound and other imaging guided procedure, pleural procedure and others as specified in the procedure lists. Observation of EBUS, rigid bronchoscopy and VATS.

1.6 Clinical Approach to Respiratory Disease-Symptoms and Signs

1.7 Comprehensive pulmonary and critical care evaluation

1.7 Antibiotic Resistance and its Management

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