

**निजामती कर्मचारी अस्पताल**  
**प्राविधिक सेवा, मेडिसिन समूह, इन्टरनल मेडिसिन उपसमूह, सिनीयर रजिष्ट्रार (स्पेसलिष्ट) पद, नवौं तहको खुल्ला**  
**प्रतियोगितात्मक परीक्षाको पाठ्यक्रम**

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

**प्रथम चरण :-** लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- २००

**द्वितीय चरण :-** अन्तर्वार्ता (Interview)

पूर्णाङ्क :- ३०

**१. प्रथम चरण (First Phase): परीक्षा योजना (Examination Scheme)**

Paper	Subject		Marks	Full Marks	Pass Marks	No. Questions & Weightage	Time
I	General Subject	Part I: Management	50	100	40	6 × 5 = 30 (Short answer) 2 × 10 = 20 (Long answer)	3.00 hrs
		Part II: General Health Issues	50			6 × 5 = 30 (Short answer) 2 × 10 = 20 (Long answer)	
II	Technical Subject			100	40	4 × 15 = 60 (Critical Analysis) 2 × 20 = 40 (Problem Solving)	3.00 hrs

**२. द्वितीय चरण (Second Phase)**

Subject	Full Marks	Examination System
Interview	30	Oral

**द्रष्टव्य :**

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- अस्पतालको प्राविधिक सेवा अन्तर्गतका सबै समूह/सबै उपसमूहहरूको लागि प्रथमपत्रको पाठ्यक्रमको विषयवस्तु एउटै हुनेछ । तर द्वितीयपत्र Technical Subject को पाठ्यक्रम समूह/उपसमूह अनुरूप फरक फरक हुनेछ ।
- प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ । परीक्षामा सोधिने **प्रश्नसंख्या र अङ्कभार** यथासम्भव सम्बन्धित पत्र, विषयमा दिईए अनुसार हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A, B, C, D मा लेख्नुपर्नेछ । सानो अक्षर (Small letter) a, b, c, d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- विषयगत प्रश्नमा प्रत्येक पत्र/विषयका प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन् । परीक्षार्थीले प्रत्येक खण्डका प्रश्नहरूको उत्तर सोही खण्डका उत्तरपुस्तिकामा लेख्नुपर्नेछ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागू मिति : आ.व.२०७९/०८० देखि

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**Paper I: General Subject**  
**Part I: Management**  
**(6 × 5) + (2 × 10) = 50 Marks**

**1. Management**

- 1.1. Health care management system in Nepal and other parts of the world
- 1.2. Fundamental principles of healthcare institution and hospital management.
- 1.3. Effective hospital management principles
- 1.4. Purpose of medical and non-medical data and records
- 1.5. Ethics and responsibility of management
- 1.6. Concept of management and its application in health care including hospital
  - 1.7.1 Management: Concept, principles, functions, scope and role, level and skills of manager
  - 1.7.2 Planning: Concept, principles, nature, types, instruments and steps
  - 1.7.3 Leadership: Concept, function, leadership styles, leadership and management
  - 1.7.4 Coordination: Concept, types, techniques of effective coordination
  - 1.7.5 Communication and counselling: Concept, communication processes and barrier to effective communication, techniques for improving communication
  - 1.7.6 Decision making: Importance, types, rational process of decision making, problem solving techniques, improving decision making
  - 1.7.7 Participative management: Concept, advantage and disadvantage, techniques of participation
  - 1.7.8 Time management: Concept, essential factors and strategies for effective time management
  - 1.7.9 Conflict management: Concept, approaches to conflict, levels of conflict, causes of conflict and strategies for conflict management
  - 1.7.10 Stress management: Concept, causes and sources of stress, techniques of stress management
  - 1.7.11 Change management: Concept, sources of organizational change, resistance to change, management of resistance to change
  - 1.7.12 Appreciative inquiry: Concept, basic principle and management
  - 1.7.13 Human resource management: Concept, functions and different aspects
  - 1.7.14 Health manpower recruitment and development
  - 1.7.15 Financial management: Concept, approaches, budget formulation and implementation, Auditing and topics related to fiscal administration

**Part II: General Health Issues**  
**(6 × 5) + (2 × 10) = 50 Marks**

**2. General Health Issues**

- 2.1. Present constitution of federal republic of Nepal (including health and welfare issues)
- 2.2. Organizational structure of Ministry of Health at national/federal, regional/state, district (if applicable), municipal and village council level
- 2.3. Professional council and related regulations
- 2.4. National Health Policy
- 2.5. Health Service Act and Regulation
- 2.6. Second Long term health plan
- 2.7. Health Management Information System, forms, indicators, annual reports
- 2.8. Human Development Indices, Sustainable Development Goals
- 2.9. Health volunteers in the national health system, its rationale, use and effectiveness

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- 2.10. Local governance and community participation in health service delivery
- 2.11. Health Insurance and financing in health care
- 2.12. Alternative health care system: Ayurveda, homeopathy, Unani, Chinese etc.
- 2.13. Indigenous and traditional faith health and health practices
- 2.14. International Health Agencies: Roles and responsibilities of WHO, UNICEF, UNFPA, Inter-agency relationships, Government-agency coordination: Joint Annual Review meeting
- 2.15. Supervision, types and its usage in health sector
- 2.16. Monitoring and evaluation system in health sector
- 2.17. National Health Training Centre
- 2.18. National and International Disaster Plan, Coordination
- 2.19. General introduction of Civil Service Hospital and its Bylaws

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**Paper II : Technical Subject**  
**Section (A) – 50 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 Pulmonology**

- 1.3.1 Gross anatomy of upper and lower respiratory tracts, lungs with lobes and fissures with surface marking
- 1.3.2 Concept of bronchopulmonary segments and lobule or acinus aerated by a terminal bronchiole
- 1.3.3 Histology of alveolar lining cells
- 1.3.4 Pulmonary vascular bed
- 1.3.5 Pleura and pleural space, functions and histology
- 1.3.6 Mediastinum and their structures
- 1.3.7 Thoracic cage and primary and secondary muscles of respiration
- 1.3.8 The diaphragm its attachments, nerve supply and function
- 1.3.9 Lymphatic drainage of lungs and pleura
- 1.3.10 Innervation of the lungs
- 1.3.11 Thoracic receptors

**1.4 Cardiovascular system**

- 1.4.1 Gross anatomy of the heart and circulatory system
- 1.4.2 Histology of the cardiac muscles
- 1.4.3 Embryology of the heart and circulation
- 1.4.4 Coronary and pulmonary circulation

**1.5 Gastrointestinal tract**

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- 1.5.1 Gross anatomy of the gastrointestinal tract at different levels
- 1.5.2 Gross anatomy of the hepatobiliary system and pancreas
- 1.5.3 Histological aspects of GI tract at different levels
- 1.5.4 Blood supply and development aspects of GI tract and hepatobiliary system
- 1.6 **Kidney and urinary tract**
  - 1.6.1 Gross anatomy of the kidney and urinary tract
  - 1.6.2 Structure of nephron and function at different level
  - 1.6.3 Development of kidney and urinary tract
  - 1.6.4 Renal circulation
- 1.7 **Endocrinal organs**
  - 1.7.1 Gross anatomy of different endocrinal organs and their development
  - 1.7.2 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

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- 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
- 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 & antiseptics, 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
- 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

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- 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 **Respiratory system**
  - 4.5.1 Drugs for bronchial asthma
  - 4.5.2 Antihistamines and other antiallergic agents
  - 4.5.3 Cough preparation, nasal decongestants, and respiratory stimulants
- 4.6 **Reproductive/Endocrine systems**
  - 4.6.1 Anti-diabetics, thyroid and anti-thyroid drugs, corticosteroids, sex hormones and antagonists, hypothalamic and pituitary hormones
  - 4.6.2 Drugs used in labor and puerperium
- 4.7 **Renal/Electrolyte system**
  - 4.7.1 Drugs for edema, and fluid/electrolyte and acid/base disturbances
- 4.8 **Infections**
  - 4.8.1 General principle of chemotherapy
  - 4.8.2 Antibacterial, antiprotozoal, anthelmintic, antifungal, and antiviral drugs
- 4.9 **Miscellaneous drugs**
  - 4.9.1 Drugs for malignant diseases and immunosuppression
  - 4.9.2 Vaccines
  - 4.9.3 Vitamins and minerals
  - 4.9.4 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 Respiratory emergencies: Hemoptysis, Acute respiratory failure, Pneumothorax, Statusasthmaticus, ARDS
  - 5.4 Gastrointestinal emergencies: G.I. bleeding, Acute gastroenteritis and food poisoning, Acute pancreatitis, Hepatic failure, Acute abdomen
  - 5.5 Neurological emergencies: CVA including SAH, Hypertensive encephalopathy, Meningitis, Encephalitis, Unconscious patient, Status epilepticus, Myastheniagravis
  - 5.6 Endocrine and metabolic emergencies: DKA and coma, Hypoglycemia, Hyperosmolar non ketotic diabetic coma, Thyroid crisis, Myxoedema coma, Pheochromocytoma, Acuteadrenocorticalcrisis, Hypopituitarism
  - 5.7 Hematological emergencies: Aplastic anaemia, Agranulocytosis, Acutethromocythpenicpurpur, Leukemia, Hemophiliaandallieddisorders
  - 5.8 Renal emergencies: Renalcolic, Renalfailure, Hematuria
  - 5.9 Miscellaneous emergencies:
    - 5.9.1 Emergencies in fluid and electrolyte balance
    - 5.9.2 Acute emergencies in infectious and tropicaldisease
    - 5.9.3 Malaria
    - 5.9.4 Septicemia
    - 5.9.5 Tetanus
    - 5.9.6 Snakebite
    - 5.9.7 Dog bite & rabies
    - 5.9.8 Poisonings

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- 5.9.9 Drowning
- 5.9.10 Electrocutation
- 5.9.11 High altitude sickness

**Section (B) – 50 Marks**

**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 Respiratory Medicine**

- 6.2.1 Anatomy and applied physiology of the respiratory system
- 6.2.2 Understanding of basic pathophysiology and be able to manage the disease processes mentioned below considering the relevant differential diagnosis:
  - 6.2.2.1 Pneumonias
  - 6.2.2.2 Lung abscess
  - 6.2.2.3 Tuberculosis
  - 6.2.2.4 Fungal infections
  - 6.2.2.5 Bronchial asthma
  - 6.2.2.6 Chronic bronchitis, emphysema and cor-pulmonale
  - 6.2.2.7 Cystic fibrosis
  - 6.2.2.8 Pulmonary eosinophilia
  - 6.2.2.9 Bronchiectasis (including its postural drainage management)
  - 6.2.2.10 Pulmonary oedema (cardiogenic and non-cardiogenic including ARDS)
  - 6.2.2.11 Interstitial lung disease (including fibrosingalveolitis, extrinsic alveolitis, lung fibrosis, sarcoidosis and pneumoconiosis)
  - 6.2.2.12 Carcinoma lung and other neoplasms
  - 6.2.2.13 Mediastinal masses
  - 6.2.2.14 Pleural diseases (e.g., drypleurisy, pleural effusion, empyema)

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- 6.2.2.15 Pneumothorax
- 6.2.2.16 Sleepapnoea syndrome
- 6.2.2.17 Acute and chronic respiratory failure

**6.3 Hematology**

- 6.3.1 Physiology and pathophysiology of bloodcell formation and haemostasis
- 6.3.2 Pathophysiology, causes and management of:
  - 6.3.2.1 Anaemia: iron deficiency (with iron metabolism), megaloblastic, haemolytic anaemia and aplastic anaemia
  - 6.3.2.2 Haemoglobinopathy and Polycythemia
  - 6.3.2.3 Leukaemia: myeloid (acute and chronic) and lymphoid (acute and chronic)
  - 6.3.2.4 Myeloproliferative diseases
  - 6.3.2.5 PV(Polycythemia Vera)
  - 6.3.2.6 Myelofibrosis
  - 6.3.2.7 Essential thrombocytosis
  - 6.3.2.8 Bleeding Disorders
  - 6.3.2.9 Plateletes Disorders
  - 6.3.2.10 Lymphomas: Hodgkin's and NonHodgkin's
- 6.3.3 Explain the underlying principles and complications of:
  - 6.3.3.1 Blood Transfusion, Blood group and Rh factor, Principles of cross match, Hazards of transfusion, Blood–platelets component, Bone Marrow Transplantation
  - 6.3.3.2 Infectious and Tropical diseases
- 6.3.4 Understanding of the following procedures:
  - 6.3.4.1 Peripheral blood smear
  - 6.3.4.2 Splenic aspiration
  - 6.3.4.3 Z– N staining
  - 6.3.4.4 Gram's staining
  - 6.3.4.5 Bone marrow examination
  - 6.3.4.6 Stool examination
  - 6.3.4.7 Aldehyde test
  - 6.3.4.8 Liver biopsy
- 6.3.5 Microbiological aspects of various infectious disease
- 6.3.6 Underlying pathogenesis of various infectious/tropical disorders
- 6.3.7 Basic pharmacokinetics of drugs used for treatment of tropical and infectious diseases
- 6.3.8 Diagnose and manage following emergencies:
  - 6.3.8.1 Septicemia, septic shock
  - 6.3.8.2 Cerebral malaria/black water fever
  - 6.3.8.3 Tetanus/gas gangrene
  - 6.3.8.4 Acute viral encephalitis
  - 6.3.8.5 Hepatic Encephalopathy
  - 6.3.8.6 Enteric Encephalopathy
  - 6.3.8.7 HIV&AIDS

**6.4 Rheumatology**

- 6.4.1 Common clinical presentations of rheumatic disease
- 6.4.2 Systemic perspective of rheumatic diseases in different systems
- 6.4.3 Genetics and rheumatic diseases
- 6.4.4 Inflammatory arthritides (RA, SpA, crystal arthritis and others)

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- 6.4.5 Infection and joints (Septic arthritis and others)
- 6.4.6 Connective tissue diseases (SLE, systemic sclerosis and others)
- 6.4.7 Vasculitides
- 6.4.8 Diseases of bones and cartilages (osteoarthritis, osteoporosis and others)
- 6.4.9 Regional musculoskeletal pain syndromes
- 6.4.10 Miscellaneous conditions (autoinflammatory diseases, sarcoidosis & others)
- 6.4.11 Bone marrow aspiration
- 6.4.12 Bone marrow biopsy
- 6.4.13 Z-N staining
- 6.4.14 Muscle biopsy
- 6.4.15 Skin biopsy
- 6.4.16 Arthrocentesis
- 6.4.17 Intra-articular injections
- 6.4.18 Anatomical and physiological aspects of joints muscle and blood vessels in relation to rheumatologic conditions
- 6.4.19 Basis of cellular and humoral immune response, autoimmunity and gene therapy in rheumatological disorders
- 6.4.20 Interpret the results of various tests such as LE cell, ANF, anti-DNA, electrophoresis, complement system
- 6.4.21 Analysis of synovial fluid
- 6.4.22 Interpret the X-ray findings of bones and joints
- 6.4.23 Interpretation of the results of:
  - 6.4.23.1 Muscle biopsy
  - 6.4.23.2 Skin biopsy
  - 6.4.23.3 Kidney biopsy
- 6.4.24 To diagnose and manage rheumatologic emergencies
- 6.5 Endocrinology and metabolic diseases**
  - 6.5.1 Understanding of the following procedures:
    - 6.5.1.1 Arterial puncture for blood gas analysis
    - 6.5.1.2 Use of glucometer and stripes for blood sugar
    - 6.5.1.3 Urine examination for sugar, Ketones, Specific gravity
  - 6.5.2 Interpret the findings of the following procedures/tests:
    - 6.5.2.1 Arterial blood gas analysis
    - 6.5.2.2 Pulse oximetry
    - 6.5.2.3 Thyroid function tests
    - 6.5.2.4 Pituitary function tests
    - 6.5.2.5 Parathyroid function tests
    - 6.5.2.6 Adrenal gland function tests
    - 6.5.2.7 G.T.T
    - 6.5.2.8 Sex hormone analysis
    - 6.5.2.9 Plain X-ray of various parts concerned
  - 6.5.3 Interpret the finding of:
    - 6.5.3.1 FNAC report of thyroid gland
    - 6.5.3.2 CT scan reports of various endocrine organs
  - 6.5.4 Diagnose and manage following emergencies:
    - 6.5.4.1 D.K.A. and coma and hyperosmolar non ketotic coma
    - 6.5.4.2 Hypoglycaemia
    - 6.5.4.3 Thyroid crisis
    - 6.5.4.4 Myxoedema coma

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- 6.5.4.5 Pheochromocytoma
- 6.5.4.6 Hypopituitarism
- 6.5.4.7 Hypocalcaemia
- 6.5.4.8 Acuteadrenocorticalcrisis
- 6.5.4.9 Hypopituitarism
- 6.5.5 Explain the structural and functionalbasis:
  - 6.5.5.1 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: dilated cadiomyopathy, 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
    - 7.3.14 Etiopathogenesis and pathophysiology of various cardiac diseases in relation to clotting system, lipid abnormalities, infectious diseases

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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 artery stenosis (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 contrast agent
- 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
    - 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

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- 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 Intracranialpressure
  - 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
- 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